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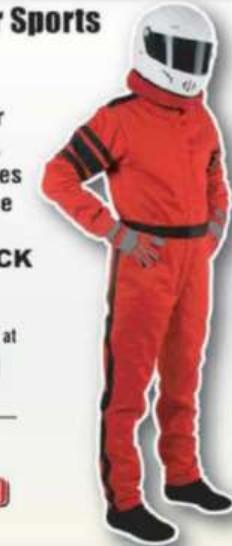
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# TURN FIVE

BY ROB FISHER

## Steppin' Up

RECENT  
ON-TRACK  
TRAGEDIES HAVE  
UNDERSCORED  
SAFETY'S  
IMPORTANCE

Unfortunately, tragedies continue to occur. In just a handful of weeks we've lost Joan Feller, a Legends racer in Iowa, and Carnie Fryfogle, a vintage racer in Pennsylvania. And back in May of this year in Scotland 11-year-old racer, Keir Millar, was killed in a Ministox race. As the name implies these cars are similar to Mini Stocks here in the States.

In all three cases, the cars being raced were what I will call lower speed race cars. In fact, it was estimated that Fryfogle's car was traveling between 50-60 mph when his crash occurred. That's a far cry from the 130-plus mph speeds that an Outlaw Super Late Model sees at Kalamazoo Speedway in Michigan. Though specific details on the safety equipment chosen by each racer is not available, judging from pre-crash photos of Fryfogle's and Millar's cars neither had a full containment seat that we could tell.

Granted, auto racing is an inherently dangerous sport and I am not naïve enough to think that we can completely remove all of the danger from the activity. However, I do believe that we can do a lot more on two different fronts: education and mandated rules. Realizing that no racer (myself included) likes to hear the words "mandated rules" let me start by saying that when we decided to mandate head and neck restraints for our Great American Racing Series I figured that we would get a lot of flak for the decision from the racers. Guess what? To date, we've had 44

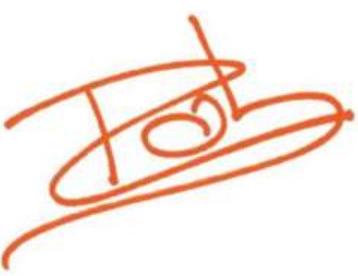
*Loyal subscribers of* this publication know that the staff and I take safety in a race car extremely seriously. We have preached over and over again about the importance of a good quality racing seat and a head and neck restraint ... not to mention the correct helmet, fire suit, fire retardant underwear, and so on.

different drivers race with us in three events and not a single one of them had an issue with that mandate. In fact, many of these racers already had the head and neck restraint, which I for one was grateful to see.

So, working with that small sampling of racers would it be safe to say that most racers would accept a safety mandate? I'm guessing probably so. Now taking that a step further I will pose this question, is it time for short track racing in this country to have a universal set of safety rules that cross all states and all tracks? I would love to hear your thoughts ... email me at rfisher@enthusiastnetwork.com.

Now, as far as that education piece goes ... our sport has done a poor job of educating new and existing racers on good safety practices and that needs to change. There's a new organization that you may have heard about, the Motorsports Safety Education Foundation (MSEF). This Indianapolis-based group is leading the charge to develop a set of safety education courses that can be taken in the comfort of your own home or shop. The courses deliver critical information to keep you safe in the pits and on the track, regardless of what you race. Their business model is exactly what this industry needs and from our vantage point is really the future of where motorsports is heading. I encourage all track owners, sanctions, and racers to check out their website at [www.motorsportssafety.org](http://www.motorsportssafety.org).

As a non-profit organization they are also seeking funding. They've started a kickstarter campaign and will also accept donations directly through their website. I for one would be surprised if they couldn't get each one of the safety companies in this country to kick in some real money. After all, the success of a safety-education program means that more racers will be educated as to what they really need to be safe and, consequently, more racers will be in the market for safety gear.

Until next time, go fast and turn left. 



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# OFF THE MIC

BY MATT PANURE

# For the First Time in a Long Time, a First Time

THERE IS NOTHING  
QUITE LIKE THE  
FIRST TIME AT  
A NEW TRACK.



the window and a huge smile on his gap-toothed face. The wording added is, "That Moment You Arrive at the Racetrack." Sure, it was already over 90 degrees when we arrived just after noon. Sure, my Wisconsin self was not prepared for this kind of heat. But there is just something about the chance to see a new racetrack that feels like Christmas.

Before arriving at Kentucky Motor Speedway in Whitesville I did a mental check to try to figure out the last time I had been to a new asphalt track for the first time (I'm a little further behind on my dirt track list. I'll get there). Before coming to CT, when racing was a 40-hour a week hobby to go with my day job, I traveled west for sales calls. I made sure to scope out some of the tracks in the area between clients or after my work was done for the day. I slipped off to get a look at Evergreen Speedway in Washington, Rocky Mountain Raceways in Utah and Irwindale and Stockton 99 in California. The difference on those days was no race cars, no fans, no atmosphere—just a racetrack waiting for the next event. At Kentucky it was race day.

I had to go back to 2012 for the last time I visited a track for the first time when an event was taking place. The Tomah/Sparta Speedway in Wisconsin had just reopened, and I was tasked with announcing a Mid-American Stock Car Series race at the venue. When I arrived at KMS, the memories of Tomah/Sparta came flooding back. My first look at the  $\frac{3}{8}$ -mile KMS reminded

*In the vast* world of social media there is a meme that describes how I felt when pulling into Kentucky Motor Speedway for our *Circle Track Great American Racing Series* event on July 18. It's a picture of Jim Carrey from *Dumb and Dumber* sitting in the back

of a limousine with his head out me of the last track at which I was a first-timer. With tight straightaways and sharp turns with progressive banking that look like a skating half-pipe, they could almost be sister tracks.

One of my favorite things to do when going to a new racetrack is to stare at the track for a few minutes. If you ever catch me doing it, it's my moment of Zen. Give it a shot yourself. There is something peaceful about the empty track before the atmosphere changes. There is something exciting about trying to visualize what the racing will look like. It's a great opportunity to try to feel the history surrounding the facility and to grasp what it is that makes a track special.

Within that history, KMS boasts some great names as alumni. Darrell Waltrip, Michael Waltrip, Jeremy Mayfield, David, Jeff, and Mark Green cut their teeth at the facility. Taking a look at the track, I could see how great drivers were produced. They always say, if you can be good at the small bullrings, you'll be good anywhere. Racing later in the night would prove this place as a bullring, but you can read more about that a little later on in this issue.

When it was time to snap out of my moment of Zen and picturing the likes of the Waltrips, Greens, and Mayfield turning laps at KMS, it was time to hang some banners and get driver information together. After you catch me staring at the track, you might not catch me again. I have a habit of putting on some miles during race days; it's just another way to familiarize myself with a new facility. I lost count of how many times I took the steep staircase from the midway to the tower during that day, but there was air conditioning in the tower, so a clear reward was waiting at the top.

Finally, after what seemed like a marathon day in the sun, the racing began. I've got to say, it didn't disappoint. As expected there was plenty of door banging and some awesome driving by our G.A.R.S. competitors. It made for a memorable trip and a hunger to get back to see more.

With all that said, Brad and his team at KMS deserve a shoutout. Any traveling official or media person will tell you that not every track shows the same hospitality. From the personnel in the pit shack, to those in the tower, to those who made the G.A.R.S. cake, I felt the Southern hospitality in my first race south of the Mason-Dixon line. I just hope my "accent" didn't throw them off too badly.

Do you have any good memories of your first time at a track? Let's hear about it! Shoot me an email or Tweet @MattPanure. Until next time my friends, stay out of trouble! 

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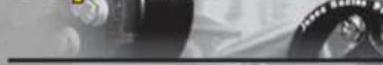
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Network Director | Douglas R. Glad

Editor-in-Chief | Rob Fisher

[RFisher@enthusiastnetwork.com](mailto:RFisher@enthusiastnetwork.com)

Editor | Matt Panure

[MPanure@enthusiastnetwork.com](mailto:MPanure@enthusiastnetwork.com)

Senior Technical Editor | Bob Bolles

[chassisrd@aol.com](mailto:chassisrd@aol.com)

Managing Editor | Sarah Gonzales

## CONTRIBUTING WRITERS

Jessica Collins, Stephanie Davies, Vahok Hill, Bill Holder, Jeff Huneycutt, Dennis Huth, Will Kimmel, Jim McFarland, Todd Ridgeway, Ernie Saxton, Ramey Womer, Dalton Zehr

## CONTRIBUTING PHOTOGRAPHERS

Shawn Crose, Stephanie Davies, Vahok Hill, Jeff Huneycutt, Jim Jones, Will Kimmel, Todd Ridgeway, Rick Schwallie, Jean-Marie Strickland, Dalton Zehr

## ART DIRECTION & DESIGN

Design Director | Rob Munoz

Art Director | Tris Mast

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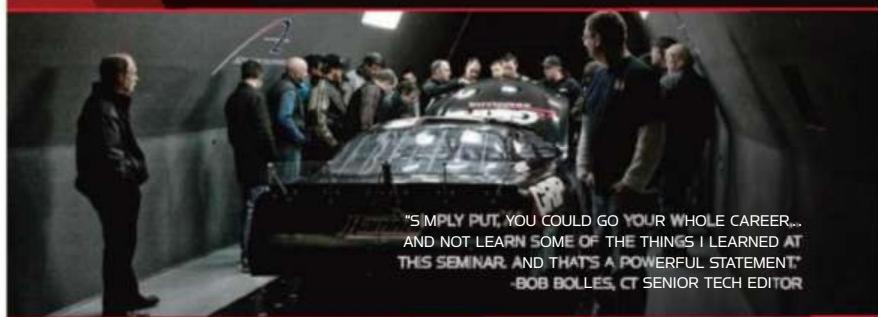
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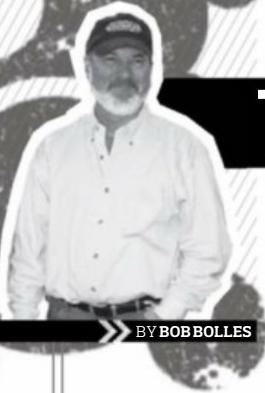
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## TRACK TECH Q&A

BY BOB BOLLES

# Becoming the Setup Guy

ONE OF THE BEST POSITIONS ON THE CREW

**When I first** started my career in racing I knew what I wanted to do. I had always wanted to be the guy who set up the car. You might relate. Sure, driving would be cool, but how many of us have the talent to do that and do it well.

And nowadays, you might need to be the son of the team owner or related to the sponsor or whatever to fund that.

The next coveted position on the team is the setup guy. You can call him the crew chief (this is usually the case), the engineer, or the car chief, but whatever the title, what this person does is envied by all.

As I moved around the country on the tour, for each team I ran into, there was always one guy who was in charge of the set up. In my consulting days, when I arrived at the shop of a new client, there was the setup guy and we either got along or he didn't want me there to critique his methods, the latter being the norm. Behind him were several wannabes who wished they were the setup guy.

I have to note here that I have never seen a setup gal in all my years in racing, but that doesn't mean there isn't one or that there won't be one, just that I've never seen one. So I will refer to "guy" here to mean all setup persons. There.

The setup guy is the one who can make or break the team. His decisions are what constitute a good or bad car, race, and/or season. It really isn't the car's fault though if things go wrong. And everyone around that guy seems to have an opinion. These are the wannabes, and I don't say that with any disdain. There can be a use for the other potential setup guys in the shop.

My opinion is that everyone on the team is important and has a desire to help the team win. What should happen on every team is that everyone should be allowed to be heard when it comes to setup ideas. Then, only that one designated setup person will make the ultimate call on setup.

But the ideas presented can and should definitely influence the decisions.

I have consulted with some very high level teams, including Cup teams in the past. I never push ideas on the crew chief. I listen and discuss items when asked. But, when I hear or see something I think might help, I speak up. The crew chief knows I don't want to interfere in his setup process, and when I do speak out, it must be important to me, and he listens. It is a mutual respect relationship.

The ultimate goal of the up-and-coming setup guy is to one day be the setup guy for this team or another. To get there, you need to learn all you can about the car, the setups, the maintenance, and so on because when that day comes, you'll be all alone with a ton of responsibility on your shoulders.

So, my advice to all of you setup-guy wannabes is keep on digging and working to help the setup guy. Respect that he has a lot of weight on his shoulders. After all, he is going to either be a hero or a zero at the end of the night. It's a tough position to be in and it takes guts to do that job. Learn all you can from him. If your learning exceeds the crew chief, don't get pushy, you'll get your chance.

Develop a relationship whereby he knows you respect him and his knowledge while at the same time letting him know your desire and need to participate on some level. If you can do that, he will appreciate your understanding and will let you into the process at some point in time. Then it just might develop into a setup team.

If you do get to be the setup guy, don't forget how you got there and that there are some around you who desire to be a part of the process. If you let them participate, they can be a real important and needed asset to you and the team.

If you have comments or questions about this or anything racing related, send them to my email address: chassisrd@aol.com or mail can be sent to *Circle Track*, Senior Tech Editor, 1821 E. Dyer Road, Suite 150, Santa Ana, CA 92705.



# TRACK TECH Q&A



BY BOB BOLLES

## Tire Soak Question

Bob,

I've read your book, have your programs, and have been using them at least 12 years.

I was reading your article on tire soaking. I'm a road racer, so I don't know much about soaking tires. But I did buy some tire prep (Goat Pee) about a year ago. I put it on my tires that had a qualifying and a 30-minute race on them and went to a track that is hard on tires.

They corded very quickly. I put the same stuff on before an event last weekend and just put it on the center 6 inches of a 10-inch tire. The track I went to was not hard on tires, and it seemed to make the tires better for several 10-minute practice sessions. I can't make my car handle well on Hoosier tires.

I've been running on Goodyear 2902s for about three years. Since Goodyear has not made these for several years

now, all the 2902s I can buy now have been sitting for quite some time. Is there any particular tire prep that you have come across that you think would help these tires? Thanks.

—(Name withheld)

*From what I have seen, you have to regulate the amount of treatment you apply. If you treat too much, the tire will be too soft and like you said, cord too quickly. It will take some experimentation to get it right, but start off on the short side of the amount of time you soak the tire.*

*To be successful, you will need to use a rotisserie to rotate the tire through the solution so that the distribution is uniform. You can time how long the tire is turning in the solution to achieve the desired softening.*

*What you are doing, bringing old tires back to new softness, is what I consider a legal and appropriate use of tire softeners. As long as you don't exceed the softness of a new*



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# TRACK TECH Q&A



BY BOB BOLLES

tire, or read lower on the durometer, you should be legal. That doesn't mean the tech officials will see it that way.

The argument could be that the commercial tire softeners could make the tire wear better and make the grip last longer than the chemicals used in the production tire. That would be hard to prove, but it could be a valid argument.

For a circle track racer using the same tire, as a test you could run a new set of tires on a 10-lap run, then an "older" new set that is treated to the same durometer reading for 20 laps and see what the lap times look like.

If there is no difference, then the officials have no valid reason to oppose the use of treatment. The other argument that you won't hear outright from the officials or track management is that the sale of new tires makes money for the track. If everyone used treatment and their tires lasted twice as long, the sales would be cut in half.

## Many Comments

Bob Bolles,

I have to comment about the old dogs write up. The best thing that could have ever happened to Sprint Cars is for technology to be left behind (exception is safety stuff). Sammy Swindell had a rack-and-pinion dual A-arm Sprint Car back in the '90s, and there have been many innovators trying all kinds of different suspensions over the years. Thank goodness none of them worked any better than the old standard deal and never caught on, or Sprint Car racing would be dead as we know it.

Dirt Late Models have run themselves out of business for the local racer due to the high costs of keeping up with suspension and engine technology. Sprint Cars are, for the most part, the same as they have been for 20, maybe 30 years, allowing local racers the chance to compete for a modest budget. The increased speeds over the years of the sprinters have mostly come from bigger and better tires and making the package lighter.

The tire on a sprinter is responsible for a great deal of the suspension characteristics, and with better tires comes bigger horsepower. On any given night you will still see a fairly big crowd of Sprint Cars at local Hoosier racetracks, where late models have all dwindled away.

The local late model driver has been forced to step back to a mod and race for \$500 to win. It is my opinion, due to the unrestricted technology (modern four-bar suspensions) the dirt mod is in compromise of dying out too.

Car counts are less than half from 10 years ago, just ask any promoter. If you hook a race car up better you can put more horsepower at it and lap times drop. It seems like common sense, doesn't it? Bigger and better engines costs big money. And it's money the local guy just doesn't have.

We are building 740hp Dirt Mod engines for customers, and they're hooking them up. That's insane! If you want to grow a class at a local track the formula is easy, take forward bite away from the competitors.

Engine rules don't work! No tech guy is going to tear

down an engine at midnight after the races to inspect. Crates don't work, they get cheated up and again no tech guy will spend the time to inspect. Simply limit the forward bite of the race car and the engine costs will regulate themselves. So what if the car is a second slower on the track, the fans won't complain because the side-by-side racing will be better.

My proof is the truck race at Eldora. They have truck arm suspensions, and they were turning lap times comparable to the local Eldora Street Stocks, and they still put on a whale of a show. Truck arms have no forward bite is my point.

I'll bet the guys that ran up front used restrictor plates to take power out of their engines to help hook them up. It is my belief that local racing can be saved and made to thrive again if we would simply back off of some that modern technology we have been talking about. Thanks for listing to my rants.

—Roger Williams

Roger,

If we took away all of the modern technology, what the heck would I do? I'd have to find another job. Kidding aside, I do see your point, but in order to have racing, we need to keep the racers interested in racing. You might be mistaking the reason why the numbers of race teams has fallen. The economic downturn over the past seven years could be a factor.

I do also agree with your assertion that using tires with less grip would equalize the field, to a point. I've seen a crate Late-Model dirt car win over a couple of high-tech, very high dollar and horsepower engine cars. And they were all on very grippy tires. He must have been using some of that high-tech chassis stuff with a low-tech motor.

As to the assertion that tech officials don't want to tear down an engine at midnight, I have these two things to say. It's the track's fault that the races are over so late. These programs can and do end much sooner if the promoter will move things along faster.

And, the tech guys are to blame for not enforcing the rules and looking into the motors, not technology. That could be fixed with the proper staffing. I have always said that sealing the crate motors was the wrong thing to do. Leave them unsealed and encourage the tech officials to have the guts to challenge the teams and inspect the motors.

As to the dirt Modified class, the disparity in performance is not only with the horsepower difference, but in experience. Most of the back 60 to 80 percent of the cars in any mod race don't drive very well and need lap time experience. Driving is a big part of success in dirt mods and that is a draw for both the racer and the fans.

If you noticed too, driving is a big part of the success for Sprint Car teams. Again, like the dirt mods, two-thirds of the field just doesn't drive as well, or as fast, as the front runners. In time they might, or they might never. It is a part of that type of racing. Technology will not make a slow driver fast no matter how much money they throw at it. ☐



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# ENGINOLOGY

## SBC at 40

SMOKEY AND 40  
YEARS OF THE  
SMALL-BLOCK  
CHEVY, PART III

BY JIMMCFARLAND

**Author's note:** We could fill more than this entire issue of Circle Track with material from the rich history of the small-block Chevrolet V-8. But since we've been referencing input from Smokey, Duntov, and others who were very close to the engine's evolution, we'll keep it in that vein.

**As we dive** into the final segment of this string of stories, it's important to mention something that occurred during the presentation of the original small-block engineers at the 1995 PRI Show. To the point, it was Smokey who introduced each of the engineers attending and on stage. As he did so, it was obviously with respect and admiration that he asked each to stand for an individual response from the audience. And yet, for as much as he had contributed to both the initial and ongoing success of the engine, he never mentioned the fact he was a major player in the process. It was classic Yunick.

Mentioned in a previous part, the performance aftermarket community seemed initially reluctant to dive into parts for the new engine, except for one: Vic Edelbrock Sr. Racer Brown, then Technical Editor for *Hot Rod* magazine, early on had written a tech analysis of the engine ... from testing on the Edelbrock dyno. So Vic already had a firsthand look at the engine's potential, and he had multiple performance parts manufacturers who were close friends. Among the companies were JE Pistons, Iskenderian Cams, Hedman Hedders, and other related sources.

Also in the mix of Vic's friends was Ronnie Householder (who later headed Chrysler's NASCAR operations), then in a position to ship two production-line small-blocks to what was then the Edelbrock Equipment company. With his performance pals joining him in the project, Vic proceeded to produce the first modified small-block capable of 1 hp/ci from a 265-incher on carburetors and gasoline. We've included a copy of the dyno sheet that verified the feat, as accomplished August 9, 1957. So in one deft move, Vic Sr. pulled the first group of performance parts manufacturers into small-block Chevy territory, setting the stage for the avalanche of parts that would soon follow.

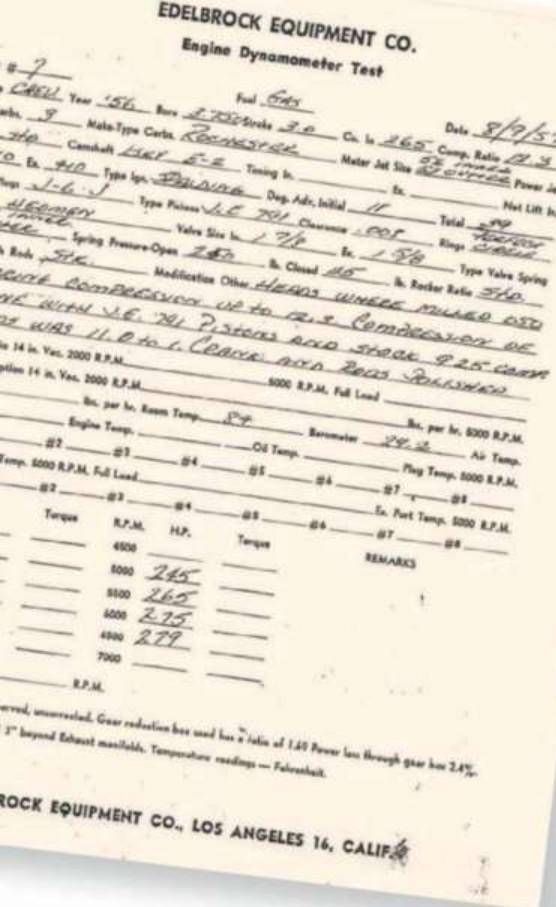
But since we're discussing piston displacement, let's return to conversations we had with a couple of those "original" engineers during the 1995 PRI Show. When the subject of how they arrived at 265 ci came up, we were told that the original displacement was to have been 231 ci. However, Cole raised that displacement to 260, following a change in stroke from 2.9 inches to 3.0. Subsequent but slight adjustments brought the initial displacement to 265.

John Burnell, under the direction of John Dolza (then head of Chevy's Advanced Power Development Section, and who was responsible for initial designs for the small-block) reflected, "With little doubt, this project was a team effort and the fact Chevrolet wanted to give the engine a performance orientation along with the work that Zora Duntov, Mauri Rose, Jim Reed, and Smokey Yunick did certainly contributed to its success. In fact, the basic design was so good that when I transferred to Australia in 1957 to the GM Holden engine group, I rounded out the engine's worldwide application by moving the right bank forward for righthand drive vehicles and went immediately into production."

We would be remiss if we did not review (for emphasis) some previously mentioned background on Cole and his team. With 40 years of service at GM, prior to his small-block experience, he was previously Chief Engineer at the Cadillac Division in 1946. He became Chief Engineer for the Chevrolet Division in 1952, a year ahead of when Duntov penned his "memo." In this role, he was responsible for the entire passenger car and truck product line that included the small-block V-8 engine. In 1967, he became President of General Motors, a position he held until retirement in 1974.

In the words of his son, David, "With regard to racing, this was an issue with my father because he was deeply committed to high performance. He loved racing and what he could learn from it. He believed racing was the ultimate test of a product. Many of the engine's features (lightweight block and cylinder heads, low friction and free-breathing induction system), in my view, were prompted by a sincere interest in racing. I think the real thrust of the project was to push the envelope; doing what someone else had done was not enough. The intent was to move the design out to the leading edge. One of the things that was characteristic of the team is that





Vic Edelbrock Sr. produced the first modified small-block capable of 1 hp/ci from a 265-incher on carburetors and gasoline as verified on this dyno sheet from August 9, 1957.

Dick Keinath (designer of the intake and exhaust manifolds and camshaft) probably summed up the overall flavor of the program in this fashion. "Through all the years that I worked on this engine, it was easy to be enthusiastic and motivated to improve it because the engine always responded well to engineering and thermodynamic changes. Very simply, it was 'fun' to go to work and put in long hours, not only in the engine group but also in the Corvette and Performance groups. I don't believe that anyone, ever again, will be able to design, test, and develop a successful powerplant in as short a time frame as that engine was."

During the course of gathering information from the small-block engineers who were unable to attend the 40th celebration, one name kept reoccurring, Al Kolbe. I asked Bob Benzinger, a senior project engineer on the small-block, what reason he could give for this repetitive mention. Rather than describe what he said or his reason for commenting, we chose to let you read what we wrote about and why.

"There are certain day-to-day details that engineers must get exactly right. They do it with a love for engines, the intensity of dedication to purpose, through the study of their craft, trying to emulate the success of others, hoping for the wisdom to avoid the mistakes of others, and very essentially the attention to detail and minutia that ultimately produces an outstanding design. And did I omit a 'fertile and imaginative mind'? I know every one of the drafting room

designers appreciated and remember Al's attention to detail. No dimension was insignificant. Every thickness mattered. Was it too light to endure or was it too heavy or thick to justify? Reducing the weight, enhancing the durability, or improving the manufacturability were also included. You could ask any of these men how often they went back over some design feature to optimize or refine the details that, in total, make up the finished product. You could ask any of them how demanding Al was, but only in light of his quest for excellence of design." Quite a statement of tribute.

Finally, we take you back to that once-in-a-lifetime, 1995 40th small-block Chevy Anniversary PRI Show. The breakfast is over, the small-block engineers have all left the stage, and the show has begun. All that remains in the auditorium are kitchen staff collecting breakfast dishes, coffee cups, and napkins. Other than these folk, there is my wife, Pat, me, and Duntov, unable to walk the show but seated in a wheelchair. We offered to wheel him through the show for a final look. What followed is beyond description, at least to the extent of my capabilities. But here's an attempt.

As Pat and I wheeled him up and down the Show aisles, it was akin to following the Pied Piper. People came from everywhere, to shake his hand or just speak, to stand clearly in awe or to thank him for his many years during and contributions to the small-block's evolution. There were times when his wheelchair was bottled in from the people surrounding us, making movement through the aisles somewhat problematic.

And, finally, and he was obviously growing tired, as we approached the main show door he asked to be turned around for a one more look. We did so, and the time that followed seemed much longer than it actually was. And then, in a voice that was barely audible and while looking out over the show floor, he said, "Who would have ever thought it would come to this."

In truth, it was his last PRI Show. He died in April of 1996. I still miss him.

when they did have controversy it was put on the table, decisions were made and they went forward. That was the only way they could achieve the high level of product development performance seen in this program.

Duntov, one of five designers in the R&D Group under Maurice Olley, was hired by Chevrolet for his extensive chassis design experience. However he had other talents, as exhibited by his participation on the team that developed the small-block's fuel injection system. In fact, his name appears on the system's U.S. Patent. According to Duntov, "In 1953, I saw that Chevrolet had an opportunity. Ford was performing to young people, and Chevrolet wanted as much of that market as they could get. Corvette was a way to do this, especially if Chevrolet had ready-engineered high-performance parts for the small-block V-8. My background told me it would take a visible, high-performance effort to make an impact on this market. Looking back, Corvette and 'factory' high-performance parts was that platform." (The following link will take you to a video of Zora's last public interview where he responds to questions about his memo hotrodenginetech.com/zora-arkus-duntovs-last-public-interview/.)

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## 1957 Chevy

**My dad and I** have talked about a '57 Chevy for years. We found the body mid-season and decided to take off a month of racing to mount the body. [August] 22nd at Beaver Dam Raceway will be the first race with the car.

—**Cody Potter**  
**Lake Geneva, WI**

*That's a great looking car, Cody! Let us know how it does on the track.*  
*Update: Cody finished Fifth in the Street Stock feature his first night out.*

## Make Safety a Priority

**For more than** 20 years, I have made a living in motorsports; supplying high-quality metals for safety cages, chassis, and structural parts. As a player in this game, I started to notice a haunting

trend: more and more racers were losing their life in seemingly survivable accidents. Why?

As it turns out, some drivers don't have the right safety equipment-tools as simple as a HANS device, fire suit, seats (properly mounted), and so forth. The basic tools most people need to survive a crash.

Even more surprising, were the racers who HAD the equipment and didn't know how to use it.

What good is a harness if it isn't installed right? What does a hand-me-down helmet that doesn't fit properly do? What about a seat that isn't mounted with the right fasteners? A fire suit, or lack thereof, that is worn out and not up to current SFI specifications is pointless.

There is so much out there that up-and-coming racers of all ages don't know and no way to know it.

I, along with three other industry professionals, decided to do something about the lack of knowledge available to the future of our sport.

We formed the Motorsports Safety and Education Foundation. We created interactive content that can educate these racers on what they need, how to use it, and when to update it. The

content is brought down to the basics, no sponsors, no branding, and no games, just education.

To my knowledge, it is the first, and only, regulated place to get this kind of information.

Most people were getting their information from a rule book, third party, or word-of-mouth. None of those actively TEACH these drivers. We got overwhelmingly positive reviews from sanctioning bodies, drivers, and fans. People were ecstatic that something like this was available. Sanctioning bodies like USAC want to make it mandatory.

Visit [www.motorsportssafety.org](http://www.motorsportssafety.org) for more information about MSEF.

**ABOUT MSEF:** MSEF was founded by four industry professionals who want to put an end to the unnecessary loss of life. Our livelihood, our community, and our families are all deeply ingrained in the motorsports industry. For decades we have considered it a privilege to work alongside teams to bring innovative solutions to racing through our businesses. And, as we considered what our legacy would be, we heard our colleagues calling for an answer to the decades-old question: How do we limit injuries and death in the sport we all love? We believe that creating an industry-wide standard for safety education is the right solution.

## Motorsports Safety and Education

**Foundation Members:** We at Circle Track magazine do our best to spread the word about safety and stress its importance whenever we have the chance. To see an organization like yours come about gives a huge boost to what we have been preaching. As you stated, many racers either don't have the proper education or access to the education when it comes to choosing and using safety equipment. To have a one-stop shop of helpful information easily could be the reason a life is saved.

We look forward to the completion of your project and hope to see your organization come to the forefront as we feel it should. Something like this is a longtime coming, and we encourage our readers and the racing community to support and embrace the MSEF. 

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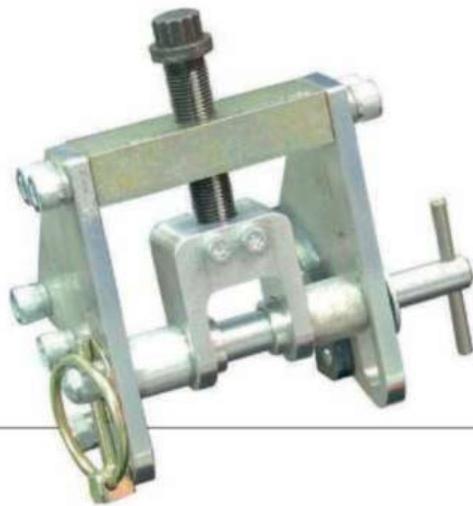

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Keyser Manufacturing Company has created a tool to help with coilover shock adjustments. Keyser's coilover shock adjuster is designed for cars using coilover shocks to make quick-and-easy load adjustments to coilovers. It gives a total of 1½ inches of adjustment, fits 1½-inch tubing, and is lightweight at just 2 pounds. The tool is specially designed for making adjustments quickly. Whether it's needed for a quick adjustment while making a pit stop, during a long race, or during a testing session where time is of the essence, the coilover shock adjuster helps you get it done easily. The adjustment kit includes a mounting kit, two tabs, and six bolts. The coilover shock adjuster is available at [www.keysermanufacturing.com](http://www.keysermanufacturing.com) for \$149.99.



## Go Digital on Your Caster/Camber Check

DRP Performance's new digital gauge reads both caster and camber simultaneously when the chassis or suspension is in motion. Featuring unique dual axis sensors, the gauge is able to measure the caster as it changes during suspension travel while also monitoring camber angle. No input from the user is necessary, and the gauge mounts directly to the spindle thread. A backlit LCD display shows both measurements. The gauge also includes a long lasting, rechargeable, lithium ion battery and charger. The caster/camber gauge saves time and increases accuracy due to both measurements being taken at once. The caster is obtained dynamically by measuring the rotation of the spindle during suspension movement without sweeping of the wheel. Simply set the static caster angle on the gauge then motion the suspension. Once that is complete, caster and camber display automatically. The gauge does not include adapter. Most standard caster/camber gauge adapters (Longacre, Intercomp) will work on this gauge. The caster/camber gauge sells for \$233.49 and is available at [www.drpperformance.com](http://www.drpperformance.com).



## Jones' Serpentine Kit

Jones Racing Products presents a serpentine drive system kit to fit your small-block Chevy engine. The kit is a five-groove serpentine that connects the crankshaft to the water pump and power steering drive. It does not include the power steering and water pumps. The kit retails for \$404.49 and is available at the Jones Racing Products, [www.jonesracingproducts.com](http://www.jonesracingproducts.com). 

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# RACING AROUND



## 1 STICKEL RESIGNS AS KNOXVILLE GM

**KNOXVILLE, IA—BRIAN STICKEL** has resigned as General Manager of Knoxville Raceway after 10 years of service at "The Sprint Car Capital of the World." Stickel's resignation comes after the Marion County Fair Board rejected a motion to start an expansion project to add a four-story building featuring 50-60 suites, retail facilities, and office space. Last May, Governor Terry Branstad signed a bill giving Knoxville Raceway a state sales tax rebate of up to \$2 million to help fund the expansion project. This expansion project would be the first significant expansion since the existing suites were built in 1993. With the existing suites selling out for the Knoxville Nationals every year since they were completed, and the rise in sales for the regular Saturday night shows, the new expansion would potentially provide major benefits to the track.

For more information, please visit [www.knoxvilleraceway.com](http://www.knoxvilleraceway.com).

## USAC .25 MIDGETS LAUNCHES NEW WEBSITE

**USAC HAS ANNOUNCED** the launch of its new website dedicated to USAC's quarter midgets. The new site features USAC.25 midget news, schedules, results, standings, and a rules/tech section. Racers will also be able to apply for USAC.25 midget memberships through the new site. For more information, please visit [www.usac25.com](http://www.usac25.com).

## 2 HOOSIER BECOMES OFFICIAL TIRE OF CARS TOUR

**MOORESVILLE, NC—THE CARS** Tour has announced that Hoosier Tire will take over as the official tire of the CARS Tour replacing American Racer. The Hoosier 37-190F45 RS tire will be used by both CARS Tour Late Model Stock Cars and Super Late Models. Tire testing began in the summer of 2015 and the new tire is set to debut at the season finale at Hickory Motor Speedway on November 1, 2015. For more information please visit [www.carsracingtour.com](http://www.carsracingtour.com).

# REGIONAL NEWS, INDUSTRY UPDATES & ITEMS OF INTEREST FROM AROUND THE COUNTRY

MANUFACTURERS, SANCTIONING BODIES, RACE PROMOTERS, TRACK OWNERS:  
SEND US YOUR LATEST NEWS! EMAIL: RFISHER@ENTHUSIASTNETWORK.COM.

## 3 CARTERET COUNTY SPEEDWAY OPENS

**SWANSBORO, NC—CARTERET COUNTY** Speedway and Entertainment Complex held an open house and open practice session this summer and will host its first racing event on Labor Day Weekend. Track owner Bobby Watson had a vision of building a world-class short track 12 years ago, and began working to turn the go-kart track into a  $\frac{4}{7}$ -mile asphalt track. Watson built the track with no bank financing, no blueprints, and with a lot of hard work and the help of his friends. The track features a full service restaurant in the infield, multiple VIP suites with bars, handicap ramps, and seating, an on-location campground, and multiple historical motorsports memorabilia. Watson's plans are not to hurt other short tracks in the area, but to work with them. He plans to run his rules based off Dillon Motor Speedway and Southern National Motorsports Park. The only difference is Carteret County Speedway will be required to run mufflers.

Carteret County Speedway and Entertainment Center will host its first race on Labor Day Weekend with a few races held for the remainder of the 2015 season. The 2016 season is slated to host a full season. For more information please visit [www.carteretcountyspeedway.net](http://www.carteretcountyspeedway.net).

## 4 WOO RACE DIRECTOR TO JOIN USAC

**CONCORD, NC—WORLD OF OUTLAWS** Sprint Car Series (WoO) race director Doug Lockwood has announced that he is leaving the "Greatest Show on Dirt" and will go work for USAC and Chris Kearns Presents Inc. Lockwood will take over race director duties for USAC Western States Midget Championship with the first order of business being the Louie Vermeil Classic in Calistoga, California. Lockwood will also work with Scott Woodhouse during the final events of USAC West Coast 360 Series before taking over as Race Director in 2016.

## 5 LUCAS OIL PRODUCTS HIRES GREG HEWGILL

**CORONA, CA—LUCAS OIL** Products has announced that chemist Greg Hewgill has joined the Lucas Oil team as technical director. Hewgill began his career with Union Oil Research Center in Brea, California, testing and developing new technologies. In 1997, he became an industrial chemist

for Wynn Oil working in metalworking fluids before transferring to automotive aftermarket research as senior chemist and lab manager. During his time at Wynn, Hewgill helped develop new products in every area of automotive fluids. Hewgill will be based at Lucas Oil's worldwide headquarters in Corona. For more information please visit [www.lucasoil.com](http://www.lucasoil.com).

## 6 NATIONAL DIRT LATE MODEL HALL OF FAME INDUCTS 2015 CLASS

**UNION, KY—THE NATIONAL** Dirt Late Model Hall of Fame has announced its 2015 class of inductees. The induction ceremony is held annually prior to the running of the Lucas Oil North-South 100 at the Florence Speedway in Union, Kentucky. The 2015 class of drivers are: Skip Arp from Tennessee, Red Droste and Curt Hansen from Iowa, Davey Johnson from Pennsylvania, and Leon Sells from Georgia. Contributors inducted are photographer Jim Butler, race promoter Al Frieden, and past writer and editor Wayne Kindness. Hoosier Tire Specialist Craig Cowan and veteran Kentucky racer Butch Shay received the Lifetime Achievement Awards. The Circle Track Sportsman Award was given to Eddie Carrier Jr. For more information please visit [www.ndlmhof.wordpress.com](http://www.ndlmhof.wordpress.com).

## 7 BUDDY BAKER DIES AT 74

**LAKE NORMAN, NC—NASCAR** Legend Buddy Baker lost his battle to lung cancer on August 10, 2015. Buddy Baker is the son of NASCAR Hall of Famer Buck Baker who raced stock cars for 33 years. Baker made his NASACR debut on April 4, 1959 at Columbia Speedway, finishing 14th out of 21 cars. He is credited with 699 career starts, and earned 202 Top 10 finishes and 38 poles. Baker's first win was October 15, 1967 in the National 500 at Charlotte Motor Speedway. Baker was the first driver to hit the 200-mph mark at Talladega at 200.096 mph in 1970. After retiring from driving in 1992 he became an analyst for TNN and CBS's coverage of NASCAR events and hosted a radio show on SiriusXM NASCAR Radio.

Both Buddy Baker and his father were named one of NASCAR's 50 Greatest Drivers in 1998. Buddy Baker is a nominee for the NASCAR Hall of Fame. For more information on Buddy Baker, please visit [www.buddybaker.com](http://www.buddybaker.com). 

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At the end of the season, you'll need to tear down your engine to get ready for a rebuild for next season. Here we offer some tips on what to look for as you pull it apart.

# Engine Teardown Tips

## HOW TO ANALYZE YOUR POWERPLANT

BY RON KOURY JR.  
WITH DAVID THORNE  
PHOTOGRAPHY BY BOB BOLLES

freshen the motor.

The intent is not a how to tear down a motor,

**Once again, following** the theme of this issue, we present a list of tips on how to analyze parts and pieces of your engine when you do your postseason teardown. This information is for any race team who either builds/rebuilds their own motors and any team who wants to know more about their engine and how it is performing, but will have a professional engine rebuilders

but rather things to look for that could be cause for alarm and re-thinking about the parts you use in the motor and how they work along with the other parts.

The more educated you are about your race motor, the better you can communicate with your supplier, should you go at it alone on the rebuild, or your professional if you will have them rebuild it. He will appreciate that you went inside the motor and were able to provide information on the conditions you found in your teardown. Then you can better plan out how the engine will be built and which parts will best serve your purpose. So, let's get started.



The very first thing we do before disassembly is cut the oil filter end off and evaluate the contents. We need to see clean oil with no particulate matter. But if you have an aluminum block, you may see some minute aluminum particles, and that's OK. What we don't want to see are copper or magnetic particles (iron or steel).

**Before You Disassemble:** After you have removed the motor from the car, look it over and observe to see if there are any obvious leaks. These may be from a gasket that has aged and has hardened, or a freeze plug that leaks.

What would raise a flag would be leaks occurring where there are no gaskets or joints. Cracks in the block may signal that you need to purchase a new block for your rebuild. If the leaks are around seals, such as the intake surface where it joins the block, re-think how you seal those surfaces.

**Remove and Cut Oil Filter:** One of the most important things to do early, and something all good engine builders do instinctively, is remove and cut the oil filter. Look inside for signs of trouble in the motor. If you are running an aluminum block, you will see tiny bits of aluminum, and there is no cause for alarm.



When we remove the distributor, inspect the brass gears for excess wear. Also note where the gears make contact. The cam gear must ride at the middle of the distributor gear. If it does not, make a note to change the height of the distributor so that the gears mesh at the middle. Also check your ignition wiring and test your plug wires.



**3**  
When removing the rod and crank bearings, note the condition of the surface. A shiny surface is not good and means the oil clearance is too little. Lines mean that material is in the oil and has made its way to the bearings.



**4**  
This cam bearing was severely scored and distorted, but still worked. There is much less load on the cam bearings than on the crank or the connecting rods. This motor has a serious problem and the cam bore alignment or oil passages need to be addressed.

But, if you see bits of copper or magnetic metals, there is a problem that you will need to find and correct for your next build. This is so important that we don't want you to forget this process in your haste to disassemble the motor. Go ahead and drain the motor oil if you have a wet sump motor.

**Distributor:** Next, we remove the distributor and note its condition. The main focus is on the gear that interfaces with the cam. This gear must not be worn and the wear pattern should be centered on the gear. If the pattern is high or low, you need to adjust the distributor stop height to compensate so that the gear works with the cam at the middle of the gear face.

Look over your plug wires and test them. You could have one or more wires that are restricting the flow of energy to your plugs. Look at your plugs at this point in time and observe the heat penetration and color.

Check the cap also to note any arcing or cracks. Look at the ignition wires and note their condition. A worn or frayed wire can cause a DNF next season.

**Remove Intake Manifold:** Once the carburetor is removed, remove the intake manifold and look at the puddles of oil lying in the tray. Here is another place where we might find signs of problems in the form of metal pits, just like we described for the oil filter.

Note how well the intake gaskets lined up with the intake ports on the heads. Now is a good time to evaluate that alignment because these will be obvious. Your gasket might have slipped the last time the intake was installed, or you might have the wrong gasket for your heads.

**Remove Oil Pan:** When you remove the oil pan, take a quick look inside at the rods and pistons. We'll take a closer look later on, but for now, just note the general condition and the color and smell of the oil that is still lying on the parts. If the motor has overheated at some point in time, the smell will give it away.

**Remove Heads:** When taking the heads off, note how tight the bolts are, especially the lower eight bolts.

5



When you have the pistons out, inspect the skirts and look for unusual wear and/or damage. The specks you see in this photo are imbedded particles that can be removed by bead blasting. General cleaning of the carbon on the pistons can be done with soda blasting. Note that the second ring should be darker and if it is shiny, then it's not getting lubricated enough.

If the motor has overheated, chances are the bolts will be loose. With the other bolts, overheating will cause the trapped oil to smell, and this is very obvious to an experienced engine builder.

Now is a good time to check for valve sealing. You can lay the head chamber down and pour mineral spirits or other thin oil into the exhaust and intake ports to see if any leaks out around the valves. Poor valve seal is a problem that can grow into the combustion flame cutting off the valve. A valvejob might be in your future.

**Harmonic Balancer:** The process of removing the rods, pistons, and crank begins with the removal of the water pump and harmonic balancer. Check your water pump for freedom of rotation and play in the bearing. It might be time for a new pump.

Run the number one cylinder up to Top Dead Center and see if the pointer

still rests on the zero timing mark. If not, your balancer might have spun and you'll need to install a new one with the rebuild.

**Crank and Rod Removal:** Now we can work on the bottom end of the motor. Remove the rod end caps and note the condition of the bearings. Shiny bearing surfaces mean the oil clearances were too tight on this motor.

Scratches or gouges mean that foreign material has gotten into the oil and you need to further investigate the source of the abnormal wear. Discoloration is another sign of overheating, either locally or the entire motor.

When you remove the crank journal bearing caps, again look for similar problems that were described before being associated with the rod bearings. The crank bolts are the source of overheating odor. And again, note the force needed to break these bolts loose.

**Pistons:** We can remove the pistons and rods now. Note the color on the inside of the piston. It should be a brown color, but not too dark. A motor that ran hot shows up as burnt oil on the inside of the piston.

Also, if one or more of the pistons are very clean with no carbon buildup on the top, you might have a leaking head gasket and some water is finding its way into the combustion chamber, which steam-cleans the piston. It's not normal.

Look at the skirts of the piston. Scratches or imbedded metal could show up. If reusing the pistons, you will need to bead-blast the skirts to remove these tiny metal parts. Soda blasting is good for general cleaning of the carbon deposits on the piston, but won't do a good job of removing the metal pieces embedded in the piston skirt.

Observe the piston rings. The

6



Turn the piston over and look at the color of the inside under the top and at the wrist pin. Here we see the wrist pin color as a medium brown, after we have moved the connecting rod over. The underside of the piston should also be this color. If it is darker, the engine has run hot and this could lead to a cracked piston and the "hand grenade" effect.

bottom compression ring should have a darker tone to it. A smooth and shiny ring is not a good sign and means it has lost lubrication. Wear on the piston 90 degrees from the skirt means your crank is not aligned with the bore or you might have a bent rod.

**Cam and Timing Chain:** Before removing the timing chain, note the amount of play in the chain. Up to a  $\frac{1}{4}$  inch of play is acceptable, but any more and you will need to replace that chain. Plan on installing a timing chain kit with the gears included.

**Heads and Valvetrain:** Next comes the heads and valve parts. There is a lot to look at because much of the work a motor does occurs with these parts. Remove the valvesprings and measure the free height as well as the installed pressure and open pressure.

If the spring has lost height, it must be replaced. The seat pressure must be within 10 to 15 pounds of new. If they are less than that, they must be replaced. Never install stiffer springs than you need.

Note any wear in the spring caps or valveguides. A wet oily spot near where the valve enters the intake or exhaust runners means the valve-guides are worn. Check your rocker arms for excess play and note where the rocker is contacting the valve stem. You might need to rethink your valvetrain geometry in the future.

7



Check your cam lobes for unusual wear. Here we see on the middle lobe to the right of the bearing journal serious pitting. This cam needs to be replaced.

Check the push rod tips for wear or lack of lubrication. Sometimes the packing grease can enter the rod and harden blocking the flow of lubricant causing damage. Completely clean and inspect your rods before installation.

**Block:** Now that we have a bare block, we can look at the cylinders and overall condition of the entire block. We need to check the bore size all of the way up and down the stroke area where the piston rides along the bore. What we are looking for, but don't want to see, is taper, or difference in the diameter of the bore, usually with the larger dimension being lower in the bore.

Also check for concentricity of the bore. As you measure, move 120 degrees around the bore for three measurements so that you can see if the bore is truly round. The bore might be smooth, but should not have any vertical lines cut into it.

**Fuel Pump:** While you're at it, check the mechanical fuel pump shaft for play and condition. Any other accessories mounted to the motor should be checked and rebuilt if necessary. Check your headers for leaks and sandblast and repaint. Carbon buildup in the headers can cause a loss of exhaust gas flow and performance.

**Conclusion:** Now we have disassembled and inspected the entire motor. We can feel comfortable that either the motor was properly assembled the last time and maintained throughout the season, reducing the rebuild costs, or it wasn't. Either way, we know what we need to do to put it back together and freshen it for the following season.

Take this opportunity to plan out your engine maintenance schedule for the coming season. If your valves-prings all came up short, make sure to replace the springs at mid-season so that your power level will be maintained through that late season push for points.

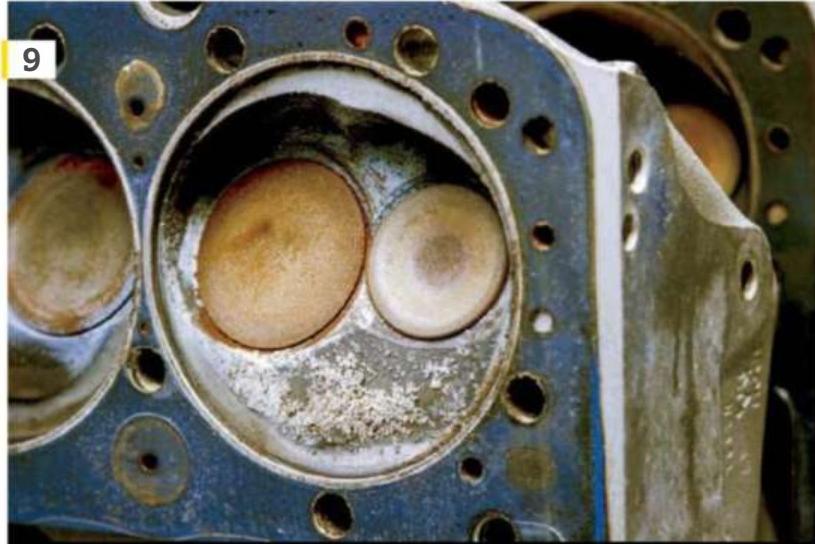
If the motor shows signs of overheating, re-evaluate your cooling system so that this problem does not repeat itself. Having a reliable and powerful engine makes any racing effort easier and provides more time to work on your setup. 

8



On roller cams, the lifters can develop a problem where the rollers are attached to the lifter. The "ears" can, and often do, spread and the corner of the cut where we are pointing develops a crack. You can check for this by noting how easy the lifters come out. If they are tight, then the ears probably have spread out. You can also measure the diameter of the lifter below the rollers and then again at the widest part of the roller near the roller pin. If the pin area measurement is larger, then the lifter has spread and failure is not far off.

9



Before disassembly of the heads, you can do a simple test to see how well the valves are seating. Lay the heads' chamber down on the bench and pour mineral oil or other light oil into the intake and exhaust ports. Look to see if any of the liquid has seeped past the valve seat. If so, you need to do a valve job on those heads.

# ULTIMATE RACING



Teamwork is the key to a successful team. Postseason evaluation can identify key strong points in your program as well as weaknesses that can be corrected. You will go into the next season better prepared and much stronger when you have properly evaluated the year's performance.

## End of Season Evaluation

REVIEWING THE PAST MAKES FOR A BETTER FUTURE

TEXT AND PHOTOGRAPHY BY BOB BOLLES

**For most of us,** the racing season has ended or is about to. Our first instinct is to take some time off and spend some time with the family. But before you do, you need to take a few moments and evaluate how things went for your team this year.

The reason this is important now is that you can recall more clearly how things have gone related to your successes as well as those things that might not have gone so well. If you wait a month or so, your recollection might not be as good. Clearly understanding and evaluating past performance can help you plan for your future.

You can make it an end-of-season party if you like and invite all of the family members for each of your team. Set aside a few minutes where the crew can meet and talk over the year. This could

turn out to be a good time to reflect on successes and areas where improvement would make things better.

The following are some areas where discussion might bring up new ideas and solutions to problems. Feel free to add to this list as you see fit. We start off with the chassis performance.

### Chassis Performance

The chassis performance is one of the first things we think about throughout the season and especially at season's end. Were we fast enough through the corners or do we need to make changes? This is easy to determine. Any one of the crew and the observers for the races can remark about how your car looked compared to the other cars.

The primary factor that affects our setup, and cannot be fixed by changing springs, weight distribution, and/or roll center locations is the

alignment. We've talked a lot about this in the past, but know that if your alignment, either front or rear, is not correct, you will fight the car forever.

So, in your evaluation of the chassis, first check the alignment areas, such as toe, Ackermann, and bumpsteer at the front, and rear alignment, rear steer, and toe at the rear of the car. These are critical areas that greatly affect your car's performance and in the heat of battle, you might have overlooked one or more of these items.

Your handling is the next thing to evaluate. Handling is not just about making a car neutral, it is about making the car balanced dynamically. And there are indicators that can tell us when we have achieved the correct balance.

The first thing is to look at the tire temperatures. These tell us a lot about how good our setup is. With any type of setup, from conventional to soft spring running on bumps, the load distribution on the four tires is the key to high performance.

The tire temperatures are the primary indicators of load distribution and the wear on the tires is right behind that. With today's setups, any one tire may be overloaded or underloaded. The ideal loading on the four tires will generate equal heat for the tires on each side of the car.

The left side tires will never be as hot as the right side tires in left turning circle track racing. But the left side tires should be within less than 5 degrees of each other, as should the right side tires.

## Engine

Your powerplant can take you to victory lane, or cause a DNF. Winning teams do not necessarily need to have the most horsepower to get to victory lane, but they do need an engine that has consistent power and one that runs the entire race.

If you have had engine failures caused by overheating, loss of power,



We start our evaluation with the chassis. This photo identifies several important chassis issues that must be correct before we start setting up our car. Bumpsteer, toe, Ackermann, caster and camber, and front geometry related to Moment Center location are all connected to making the chassis work. If any of those items are wrong, no setup changes will compensate and your performance will suffer all season long.



Weight distribution goes hand in hand with setup balance. You should have a good set of scales or know where you can borrow some from. When weighing the car at the track, remember that most times the scales are different and not necessarily level. If you have recorded a cross weight percent of 52.0 at the shop on leveled scales, and the track scales show 53.0 percent, don't change your weight distribution, just subtract 1 percent from all readings you take.

# ULTIMATE RACING



Evaluate how well your crew recorded tire temperatures, sizes, and pressures. These can be looked at and studied in the offseason and compared to the car's on-track performance for each race. A lot about the car's handling balance can be observed by looking at the tire temperatures.



Record the spring rates you use for each race. Many teams experiment with different spring rates and there can be a lot of confusion as to how those changes affected the performance. A postseason evaluation of those changes versus how well the car worked can lead you to a better combination of spring rates for the coming season. Shocks also figure into this. Good records of the changes in settings for each shock help us know what works and what does not.

carburetor issues, and so on, talk to your engine builder or other qualified tuners to see how to fix those problems. Think back on the season and if you've had engine-related failures, make a list of what you think went wrong and work out solutions.

If you have had electrical failures, re-think how you wire your car. Every connection must be soldered and protected with shrink wrap to reduce flexing. Points where the wires are routed through sheetmetal must be protected by rubber grommets.

Trace each wire in your car to see if there might be a potential problem. Then make notes to go over when the team is ready to get back together to prepare the car for the new season. Most top teams will re-wire the entire car in the off-season.

If you have had overheating problems, consult with your supplier to see if you might need a new or different design of radiator. Go over all of the components that work to cool the motor.

Carburetor issues can be frustrating. There are many carb experts who can help you tune your fuel delivery for a more perfect mixture and one that produces better power on initial acceleration as well as at the end of the straights.

Gear ratios are an area to look at when evaluating performance. If you get pulled away from on the restarts, your gear might be wrong for the track you are running. Remember that we gain more from acceleration at the lower speeds coming off the turns than we do from the mid straight to turn entry. The faster a car goes, the less acceleration we have.

Gaining speed off the corners, as long as we don't spin the tires, gains more than losing speed at the end of the straights. And, a surge at the end of the straight will oftentimes ruin our turn entry, further reducing performance. When in doubt, go for the lower gear.

Most racing engines need attention in the valve areas to maintain top power. Check your valve clearances and valvespring pressures. If you have run the same springs all year, and now you find that they are weak, you might

need to plan on replacing them at mid-season next year.

If your valve clearances are off, plan on checking those more often. This is an easy fix, we just need to be reminded to get it done. Most teams will have their motors freshened up or rebuilt, but do this checking before you send the motor off.

### Crew

Ask everyone to critique how the crew performed in the handling of duties, performance under pressure, and other topics. How satisfied is each one of them in their work and the work of others. Did they mesh well and were they able to cover each other when things got busy? Is the shop time constructive besides being fun?

Think back over the past year and try to remember where mistakes were made. When you have recalled those problems, meet up with the team members and discuss what could be done differently to prevent those problems. This is not about laying blame, it is about improving and you should make that clear at the outset.

To help the crew with their duties, many teams post a list of "things to do" on the car. As each item is taken care of, it is checked off. Checklists are a great way of showing the crew chief what has been done and what needs to be done.

The cool thing about a race team is that the members share in the glory. They know that they are a large part of the success of the team. So, in that way, they share the responsibility of how the car performs. It's that feeling of responsibility that makes a team great.

### Driver

This can be a very tricky subject to address. Most, if not all, drivers have an ego that resists criticism. So, we need to remove the word criticism from our evaluation and enter any discussion about driver performance from the position of trying to improve the driver's skills.

Most new drivers over drive the car. This is normal because all drivers want to make the car go as fast as possible. Driving deep into the corners seems

Evaluation of the engine's performance is a part of our postseason review. If overheating was a problem, it might be time to install a better radiator or review the entire cooling system. Many teams struggle with hot engines during the midsummer months and by late fall forget how much of a struggle overheating was.



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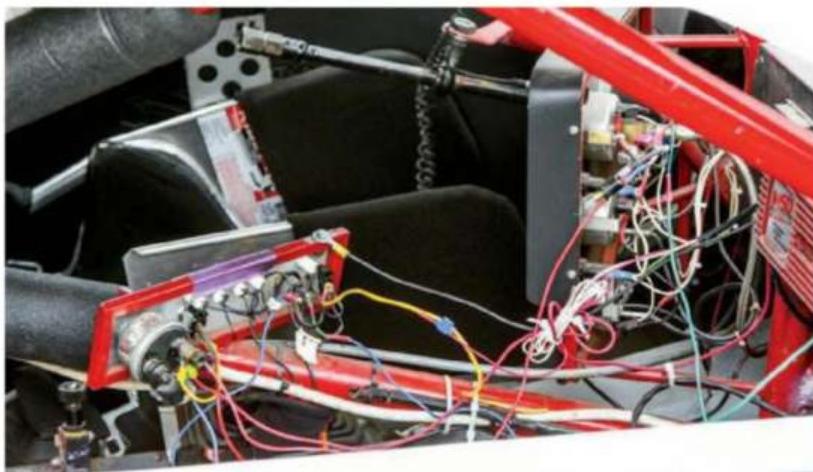
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# ULTIMATE RACING



Have you had electrical problems over the past season? In your evaluation process, make plans to rewire the entire car so that the wires are easy to trace and so that they are properly protected. Wiring issues can end your race and cost you valuable points.



Re-evaluate your engine maintenance procedures. Valve clearances and spring pressures need to be checked on a schedule that makes sense for the engine you are running. The higher compression and higher horsepower engines require much more attention than a crate motor.

In your postseason evaluation process, talk about your team's communication skills, or the lack thereof. One of the key elements of a winning team is being able to exchange ideas and express what needs to be done in as few words as possible. Good teams mostly don't have to say anything, what needs to be done is just known. You might need to work together for a while to develop that good a communication skill.

to be the correct way to do that, even if it is not. Having them back off to go faster is a start. Another important thing for a driver to learn is throttle modulation.

At season's end, think back on how your driver handled traffic situations, crash avoidance, restarts, and communication. First ask what concerns they have about the season and what the crew can do to make the driver more comfortable.

Once you have addressed the driver's perceived difficulties, talk about what you see from the observer's point of view and discuss how the driver might handle those issues in a more effective way.

## Preparation

The process of getting the car ready to go racing and the work that goes on at the track is important to success. A team that does a better job of preparing a car at the shop will have more track time with fewer headaches. Evaluate how prepared you were last season.

You've seen the teams who are all over the car from the time it is unloaded at the track until it is fired up and goes out. They are usually late for practice and get to run less laps as a result. Maybe the team members cannot get to the shop during the week, but they should. Doing basic maintenance work on race day is a hard way to go.

## Equipment

Did your team have all of the tools that were necessary to properly work on the car last season? In thinking back, you might recall having to borrow certain tools to the point that it might be time to buy those tools. If some of your power equipment is getting old and worn, it might be time for a rebuild or replacement.

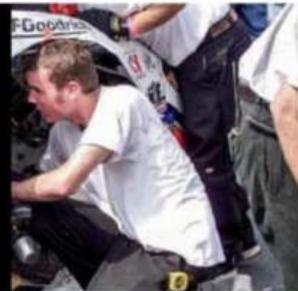
Think about what tools other teams had and how that affected their preparation. If you don't have a set of scales, then now might be a time to find the funds for that most basic setup tool. Pit guns, compressors, drills, rivet guns, welders, race jacks, saws, and so on, are all tools that we use constantly. Go over each and every one of them to make sure they will hold up next season.

## Communication

The way in which the crew communicates is of primary importance in getting anything done efficiently on the team. In any business or endeavor the methods used to communicate will make the difference between success and failure. A separate and frank discussion about how your crew transfers information would be one of the most important discussions you can have postseason.

The leader of the team must effectively communicate how he wants the team to perform, meaning who does what and when. The overall plan for that can be designed by the team, but

Evaluate your team's preparation, which should be done mostly at the shop in the days before you show up at the track. If a team needs to do routing maintenance on the day of the race, it complicates the entire race day schedule. The top teams look relaxed and un-hurried on race day and make every practice. If you are not prepared when arriving at the track, work toward making that happen by re-arranging your maintenance schedule.



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The driver and crew chief need to be comfortable with the exchange of ideas and thoughts on how the car is working and what the driver needs changed in order to make it better. There is no right or wrong, just what makes the performance better. And the driver needs to be open to constructive criticism if they are relatively new to racing, or a more advanced division. Evaluate how all of that went over the past year and develop ways to improve the exchange of information.



In rebuilding and repairing the car, you will need specialized tools. Evaluate your shop and trailer and make a list of items that would make everyone's job a little easier. If you have been borrowing tools from fellow teams, now might be a good time to make a purchase of what you will need for the new season.

## END OF SEASON EVALUATION

ultimately it is the leader who enforces the plan and executes the orders. It all starts at the top.

The team members must develop a good line of communication between themselves outside of the crew chief so that their duties will assist each other and not negatively affect each other. Some tasks just take two or more people to accomplish. So, team members will help out when needed. Don't be afraid to ask for help, or give a hand when needed.

A driver must learn to communicate with not only the crew chief, but other crew members about how the car is performing both in the handling aspects as well as mechanical functions. He/she can prevent serious failures by letting the crew know when the tranny develops a funny sound, or there is a vibration or the brake pedal is going down slightly.

The spotters not only must have a comfortable and effective relationship with the driver, they must be able to spot trouble with the car and assess the level of damage in a crash and be able to communicate that to the crew. How did your spotter do this season?

The spotter also communicates with track officials, keeps track of where the pace car is, relays the location of other cars relative to theirs and do all of that while remaining calm, clear, and professional. It is an important job and any feedback the crew can give to make their job better helps the entire team.

## Conclusion

The point we are trying to make here is that in order to be successful, you need to evaluate your performance and procedures. The more you refine your processes, the more successful you will be. I don't know any teams that win on a consistent basis that do not refine their processes.

Postseason evaluations should take place right after the last race so that your memory is fresh. Go over all aspects of what makes your team function. Schedule a meeting for all of the crew members at the shop as soon as possible. Go over how the season went as well as how the crew might make improvements. It's what the winning teams do. ☐

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# ULTIMATE RACING



## A New Youth Movement

A NEW KIND OF CLASS—STUDENTS BUILDING RACE CARS

BY MATT PANURE  
PHOTOS SUBMITTED BY  
**PAUL TREGEMBO JR.,**  
**ROSEVILLE HIGH SCHOOL,**  
**AND KAYLA HOOD,**  
**ASPIRE HIGHER RACE CAR**

**A walk through** the pit area 10-15 years ago looked much different than it does now. Many young drivers are now jumping behind the wheel, some as young as 10.

What may be lost in the next generation of race car drivers coming through the ranks is the next grouping of race enthusiasts—crewmembers, chassis builders, fabricators, marketing people. Slowly but steadily around the country these mem-

bers of the next generation have been trickling into the sport. Just as the racers, which have become younger and younger, this grouping has seen its infusion of youth as well.

While the means of the programs may be different, the goals are the same—get the local youth engaged in short track racing and give the kids a chance to learn new skills outside of the classroom.

### The High School G.A.R.S. Car

Paul Tregembo Jr. is a second-generation shop teacher carrying on a tradition at Roseville High School in Michigan. His father Paul Sr. and uncle Richard Weiss were both auto shop teachers who began a winning tradition. In 1976 they built a championship racer for Mount Clemens Speedway, running in a six-cylinder class. In fact, Paul Jr. and his class used that same style motor—an old short-block inline-six from 40 years ago—in their car, which they raced at

Sands Speedway in Upper Michigan last season.

However, when Paul Jr. learned of the G.A.R.S. series he figured it was time for an upgrade. The car now has a 355 in it with the 4412 Holley carburetor. Aside from the underhood change and some technological advances, the car itself is the spitting image of the old Nova.

To re-create the Championship car from 1976 was no easy task. The chassis and body both had to make a trip to Michigan from Arizona. The students were handed the bare frame from an old Monte Carlo and went to work bending pipes and adding cages until the chassis was complete.

The body was another challenge. Paul Jr. explained the difficulty of finding a Nova body at a reasonable

price. They were able to find one in Phoenix. Luckily the class had sent a truck to compete in the America's Best Roadster Show in Los Angeles at the time. With some encouragement Paul Jr. had the Nova on its way. "Basically it was only a rolling shell. There was no floor or anything, but we didn't need it anyway."

The G.A.R.S. car itself has become a carrot at the end of the learning process. While some students attend the class to learn the basics of car care, others do have a true interest. However, the G.A.R.S. car is a world of difference from the street cars most students are accustomed to.

"The first big 'what's that?' is the carburetor. Everything in their world is fuel injected and has been their whole life," Paul Jr. said.

Not surprisingly, most of the students do not have a background in racing. In most cases, they have no automotive background either. Knowing this, Paul Jr. and his team have an orientation process to bring the students along. It starts in tenth grade when the students come through the door for a one-hour basic class. The basic class consists of introducing students to the tools and what they do. "Thirty years ago it was a different world, but their world with texting and phones; it's just not something they play with. You start them from that point and you have to cover quite a bit of real estate to get them through the different aspects of what we're doing."

Once the students have made it through Roseville's basic training, it's time to get to work. The path to the



Paul and his Roseville High School students built a replica of the car his father and uncle built in 1976. That machine was driven to a Championship at Mount Clemens Speedway.

# ULTIMATE RACING



A metric Monte Carlo frame was the starting point for this build.



It was no easy task to find a Nova body in decent shape. The team had to have one delivered from Arizona just like the frame.

G.A.R.S. car begins in autoshop. Paul Jr. says it's during this time that the students begin to carve a niche. They start to break off into groups. Some find interest in the fabrication, some in the engine, some in the driveability of the car, and some gravitate toward the bodywork. Although the rewards are not instantaneous, Paul Jr. says there is payoff in every day for the students.

"The nice thing about a stock car is that they can actually see, almost on a day-to-day basis, the forward progress of it. That's really key because what makes them different than the students that were around 30 years ago is that everything has to change and move so fast. So being able to see things move at that pace is great because it fits the pace of the world they live in."

Those students who do push through the auto shop portion and move on to the G.A.R.S. team have no problem working outside school hours, according to Paul Jr.. Commitment and enthusiasm provide a huge lift to the team. "They have a passion for it, but this group is very new to it. All of the expectations are high. It's not something where they're going through the motions."

It helps that Paul Jr.'s son, Brandon, is the driver. The students in the program are mostly Brandon's friends. They have known each other since middle school. When they found out about the project car, the students were ready to begin. "The fact that we know each other helps us work together a lot better. We get along fine," Brandon says.

Of course, there are some challenges to an all-student team. Paul Jr. explains the biggest obstacle to overcome is the inexperience. From time to time, they will have to stop, go back, and start all over. They will even debate on setup. He recalled such a debate at Salem. A student wanted to make an air pressure adjustment to tighten a free race car. After the student's adjustment, Brandon spun in practice. Paul Jr. stepped in to help with his advice to solve the problem.

At the first G.A.R.S. race in Salem seven students made the trip to crew for the team. Several drove down with Paul Sr. and Brandon while the

rest hitched a ride with Paul Jr. the following day. Although seven makes a strong crew for most drivers, Paul Jr. hopes to raise the number to at least 10 per race.

This, of course, could pose a challenge for the team—expense. Transportation and lodging for a team of 10-15 people can add up, along with

the expenses of the car and the tire bill.

"It's a challenge at best. It's always an uphill climb trying to make it work and get as much help as you can from as many places as you can," Paul Jr. said. "We do whatever we can and cut corners wherever we can to make things work. We've been very

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# ULTIMATE RACING

successful in a lot of different places."

One of the main successes of the program is providing opportunity. Brandon has already committed to Purdue University to join the race engineering program. Strong relationships with UNOH, Ohio Tech, and UTI

also keep doors wide open for the Roseville students.

## Middle School, Upper Classmen

Stepping foot into Mitch and Judy Green's Crazy Horse Race Chassis has



A little progress every day keeps the students interested.



The students from Oxford Plains Middle School aren't afraid to get their hands dirty on the Aspire Higher Race Car at Oxford Plains Speedway.

the potential to raise some eyebrows. On any given day four students from Oxford Hills Middle School will be tearing apart and rebuilding race cars. It wasn't something Mitch Green had envisioned when he bought the business in 2007, but it's something he wouldn't trade either.

Throughout his 20-year teaching career Green spent his summers working for Race Basics in Andover, Maine. When he decided to retire, he and his wife, Judy, purchased the business and moved it to Oxford. Shortly after, Green was approached by the principal of Oxford Hills Middle School with a proposal to start an automotive program for the kids. The problem facing the middle school was a location. Green's shop provided a solution.

"We got through the details and I told him we don't build a Street Stock-style car or outlaw car. We build Late Models and Super Late Models," Green recalls. "He asked if we could do that, and I said I don't know why we can't."

Each day a new group of four students rolls into Crazy Horse to work with Mitch and his son, Mickey. The students do everything from cut pipe, to fabrication, to set up. They are brought in not just as students, but as part of the business. "They take a lot of responsibility in what they do because they're outside of the school walls, which sometimes changes kids for the better, as far as I'm concerned," Green adds.

As part of the business the students not only work on their own car, but any other customer car that comes into the shop after the weekend. Green says Monday mornings can be like Christmas. There are a bunch of packages, and they aren't sure what's inside.

Dealing with younger kids can be a challenge, especially to keep their attention. Green said their goal is to make sure that days do not become routine. The fact that a bent up race car could arrive on the doorstep on any given day, and changing plans, keep the kids perked up. A change of scenery is a good thing, Green says. Also, the fact that the business takes part in a competitive sport is a huge boost to morale. The enthusiasm has

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# ULTIMATE RACING



There are plenty of willing participants from Oxford Hills Middle School on race day. So many are happy to chip in, in fact, that some students come to work on the Crazy Horse house car so they can stay involved every week.



The students of Roseville High School's auto shop program will continue to support their race team into the summer months at the remaining G.A.R.S. races. Brandon Tregembo is at the wheel of the Nova.

yet to fail under these circumstances.

Although the students do lend hands around the shop, Green says they primarily work on their car, named the Aspire Higher Race Car. It is a straight rail Super Late Model with a 604 crate motor. The Super Late races weekly at Oxford Plains Speedway with 21-year-old Spencer Morse behind the wheel. Green added he feels it would be a competitive car in the PASS North Series, as well.

To be a part of the team, Morse went through what he said felt like an interrogation process. The third-generation racer went into a classroom of around 40 students who each had a question for him. After addressing the "car owners," the unanimous decision came down that Morse was the right man for the job.

Much like Paul Jr.'s group, the students are needed for race day. In fact, aside from a teacher who oversees the group, there is little adult help. Green himself must attend to a parts truck for the business and the other Crazy Horse chassis in the field. The students are fully responsible and given duties at each race. So many students want to stay involved that Green shifted them to another race car. Longtime competitor at Oxford Plains Andy Shaw drives the Crazy Horse house car, which pits next to the Aspire Higher machine at every race. The students can jump in on their off week and continue to learn.

The school-based enterprise formed four years ago, mostly for at-risk kids who needed an environment outside of the classroom. There are now 45 students between the ages of 12 and 14 involved.

Green has thrived on combining his love of teaching and love for the sport. Not only will he walk the students through the process with an explanation, he makes sure the kids get a proper amount of homework from their day at Crazy Horse. Recently, the school has done the same, using the race shop as a teaching opportunity.

Morse, who had hoped to be taught by Green in school, missed out on the opportunity to be one of his students. He thrives on the chance to work with him now. Mitch is such a wonderful

## A NEW YOUTH MOVEMENT



Instruction is important. The students are eager to learn and get direction not only from the program overseers, but from others in the Crazy Horse Racing stable.

teacher," Morse explains. "I didn't know much about Super Late Models coming from the Street Stocks. Already in the short couple of months I've learned a ton about the cars. I'm learning as much as the kids are, I think."

One drawback to the current program is the lack of continuation from middle school to high school. A plan is being put in place to create a Crazy Horse annex at the tech school where everyone can get together once a week. This will provide more opportunity for the students to stay involved from seventh grade through high school.

Morse says that can only be a positive, and that continued success and participation in the program will help the progression. "I think the more success we have the bigger and better this can be. Hopefully other schools will pick up this type of program. I know

when I was in school this would have been huge and got me excited about going to school, and that's what a lot of these kids are saying."

Not only could this be an opportunity to keep kids interested in school, but a chance to build on the sport.

"I thought the more you would get the kids interested in it, the more they'll get other kids interested in it. The future of racing needs to be thought about," Green says. "If we go 20 years from now and these kids are in their thirties with no interest in the sport, racing could be in trouble."

Time will tell if this new youth movement creates another generation of race enthusiasts and fans. Until then, the likes of Tregembo, Green, and their programs will continue to do their part in grooming the youth of the sport. ■



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Dick Anderson is the king of Old To New. He has resurrected many stock cars in his career. This is one example, an older chassis with a cruddy rear end that was salvageable. He stripped it, repainted it, cleaned up the relevant and recoverable parts and mounted new wiring and a complete modern body. What resulted was one of the best looking race cars we've seen in a while.



# Old to New

MAKING YOUR OLD CAR LIKE NEW

TEXT AND PHOTOGRAPHY  
BY BOB BOLLES

**For many teams,** when we are done with the current season, like most of us are right now, it becomes decision time. Do we purchase a new chassis, or run the old one another year? What many teams do is completely rebuild their current car. Here are some tips on how to do that.

The things to take into consideration when making the rebuild or purchase decision are, how old is this chassis? How many times has it been bent or the front and/or rear clips been replaced? If old enough, is the metal fatigued to where it flexes considerably?

**Record Old Dimensions:** It might just be time to replace that worn-out old workhorse, no matter how successful it has been. But before you trash it, be sure to take some important

measurements, such as the spindle length and pin offset location, the heights of the four chassis pickup points for the control arms, and the control arm lengths, as well as the ball joint sizes.

For your new car, you might want to duplicate those numbers in order to regain that great performance you had with the old car. I have done just that with many teams. In some cases, we had to find out the new car just did not turn like the old one. So, we repositioned the control arm mounts and replaced the spindles, and just like that, the new car performed just like the old one did, and won races.

**Getting Started:** But, if your current car is fairly new, and not too beat up, let's get started on doing our rebuild. First have a teardown party for your crew. This can involve adult refreshments because nothing precise is going to take place.

We must remove the entire body and discard

what we won't want to reuse. We do this first because removal of all of the other parts and pieces will be much easier with the body out of the way.

Remove the rear end and all mounts, then the radiator, engine and tranny, the fuel cell, all of the wiring, the gauges, the seat and belts, the front suspension parts, and the steering components.

Disassemble the brake system, remove the pedals, fire control system, and any other attachment on the chassis. Make note of the bolt sizes that hold all of the parts onto the car. We will want to replace most or all of those with new ones.

**Clean It Up:** Have a cleaning party using a pressure cleaner and place all of the components on a concrete slab and go at it. If this is a dirt car, this will be interesting because you've probably not seen most of these parts clean in some time. Use a grease cutter for parts that need that.

You can include the engine, but be sure to seal all of the openings well. Even with a motor that will be rebuilt, we don't want to introduce water into the inside of the motor and cause rust to start. It might be some time before it actually gets torn down.

Now that we have all of the parts separated and clean, we might consider having the entire chassis/rollcage assembly sandblasted and powder-coated. We can include all of the control arms, rear suspension links, and other connections in this process. But you might want to make the control arms a different color.

**New Mounts:** Now, before we do the sandblasting and re-painting, think about any new mounting points you might need to attach to the chassis. Now is the time to weld those on. If you decided to go with a different sized radiator for next year, or any other different component than what you used last season, fit those now and attach the brackets before you paint.

Before you strip your car, take a lot of measurements so that when you put it back together, you'll have the same performance you enjoyed before. If your performance was not up to par, now is the time to correct the problems.



When the body has come off, you'll see some damage that was not so apparent before. When we crash, we usually are in a hurry to replace damaged sheetmetal and other body parts and fail to inspect the chassis tubing for cracks and other damage. Now with everything removed, we can go over the entire car. Sandblasting the frame and rollcage would be the ultimate in preparation for repainting, or even powercoating.



Do a thorough inspection of the hubs, axle tubes, suspension links, and mounting points. This gets much easier to do when the body is out of the way. You could even do your rear steer simulation now to note how much the rear steers when the chassis is at the corner attitude. Again, with the body out of the way, there are many possibilities.

4



This is probably what your body looks like after a hard season of racing. Cracks and loose rivet holes are normal, but all of this needs to go. Teams on a budget can do a fiberglass repair job and get by, but if the funds are there, it's nice to begin the new season with a new body in place. It just makes the car feel new.

5



Review the expiration dates on all of your safety equipment and replace what has expired. Look for cuts and wear on your belts that will be returned to the car. Removal lets us adequately inspect these parts, whereas when they are in the car, trouble spots are very hard to see.

6



Leaking gaskets and connections can be remedies now. With the removal of the fuel cell, you can take the assembly apart and inspect and repair the bladder, connections, and the containment structure. These cells have a life expectancy too. Look for the expiration date.

7



It is a good idea to dismantle the complete rearend and check the bearings, gears, and axle tubes. If your rearend is not a modern, low-friction type, then you are losing power to the rear wheels. You can purchase low friction parts to fit into your older rearend housing to make that rearend up to date. Just call your supplier and tell them what you want to do.

If you needed to move your lead around and could not find a suitable mounting point, now you can create a weight box or bolt on point where it is needed. Some of the clamp-on parts that will stay on the car could now have a bracket welded to the frame to hold the part that is more secure than the clamp.

**Out of Date?** Make notes about the life of key components, like your transmission, rear end, brake system, cooling system, gauges, seat and belts, steering box, rack-and-pinion, and fire control system. If any of these need to be re-conditioned or replaced, get that done while the other parts are off at the painters.

Let's look at each component and see what the possibilities are. We will start at the rear of the car and work our way forward. The decision is whether to rebuild or replace.

**Fuel Cell:** The fuel cell has a life. It is stamped on the cell, and if it is too old, it definitely needs to be replaced with a new one. While we are at it, we need to observe the condition of the fuel lines, fittings, filler hose and clamps, fuel pickup, and cell mounts.

It is highly recommended to replace all of the hoses. If the fittings are in good shape, keep those but the stainless clamps can get stressed and worn and these are fairly cheap to replace, so go ahead and do it.

**Rear End:** The rear end is next. If your rear end is of a more modern design, it will be a low-friction type. You will need to replace all of the seals and gaskets. If the differential is a traction-enhancing design or a locker, inspect the parts and replace worn parts.

On the Detroit locker rear differentials, the springs get weak and need replacement periodically. These little items can be a real headache when they go bad because the handling will go south and you'll fight the setup trying to fix the problem. Always install new locker springs after the season is over.

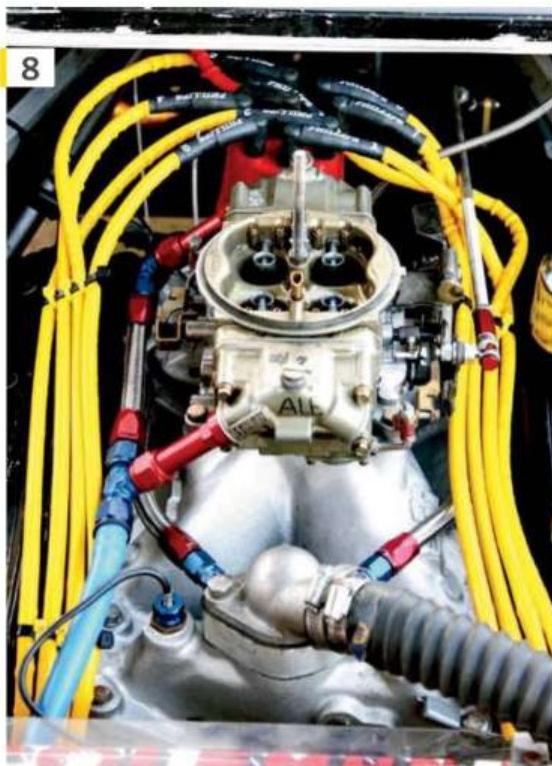
Check the pinion bearings and all other bearings for excess play and readjust or replace. Check for cracks in

the gears and housing. Check the axle tubes for straightness and inspect the axle ends for deformation.

**Driveshaft:** Next we move to the driveshaft. This part can take some serious punishment and is exposed to lots of things on the racetrack that can dent, bend, or scar it. Replace the U-joint endcaps and bearings. Inspect the shaft for straightness and balance. Check for excess play where the shaft coupler enters the transmission output shaft. Repaint the shaft.

There are service centers who can balance the driveshaft in most towns. Cars and trucks need this periodically. It might be a good idea to have your shaft checked, especially if it looks like a balance weight has fallen off.

**Transmission:** Then we move onto the transmission. This part probably needs to go to the proper supplier for a complete rebuild. They will replace all of the bearings and bushings, check



Wiring is many times the problem associated with a DNF. In the off season, many teams will completely re-wire the car. This takes several days and some serious concentration, but the reward is a car that runs the entire race without cutting off. You can test your plug wires for resistance, and if they have been on the motor for several years, now is the time to replace them. Go over the carburetor and do a rebuild on it. Check the linkages for wear and damage. Replace the fuel lines and rebuild the fuel pump.

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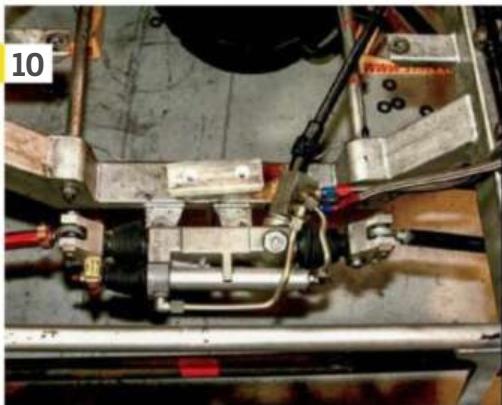


9



The cooling system will be removed and inspected. Clean out all of the dirt and rubber from the fin area and try to blow the debris out from the back to the front. Replace all of the rubber hoses and clamps and inspect the water pump. Now is the time to re-evaluate how well your system cooled the car last summer.

10



The steering system in the car gets a workout during the season and the last thing we need is for this to fail. Failure can often mean a crashed car. Remove and inspect or rebuild the rack or steering box along with all of the linkages and rod ends. Everything needs to be tight.

11



The newer, low-friction ball joints are not just good for easy movement, they are very easy to inspect and rebuild. Clean these units up well and make a thorough inspection. Worn housings need to be replaced and bent shafts also need to go. If you need to make changes

to your moment (roll) center location, you can often get what you want for control arm angles by installing different length ball joint shafts.

12



The complete brake system needs to be removed and inspected. Damaged brake lines need to be replaced and the master cylinders and brake calipers need to be rebuilt. If your balance bar is off center, now would be a great time to think about installing different sized master cylinders to change the line pressures to the front or rear. Remember that a smaller master piston generates more line pressure (stopping power) for the same pedal pressure.

the gears for cracks or excessive wear, and give it back to you in just about new condition.

**Clutch:** Moving forward, the clutch assembly also takes some abuse. Rebuilding or replacing the clutch is mandatory for all teams who run a full season. The clutch springs run hot, the plates get worn, and the master and slave cylinders need to be refreshed. Check your bellhousing for cracks or other damage while you're at it.

**Motor:** The motor needs to be analyzed as to how many hours or laps are on it. If it is a crate motor and still has good compression, all you might need to do is check the valvesprings for seat pressure and replace if necessary.

Along with the motor, check the peripheral parts, such as the fuel pump, for diaphragm replacement, water pump for excess play, alternator, belts, pulley, and the headers for cracks or dents.

The carburetor should get a thorough cleaning and gasket replacement. Check the throttle shafts for excess play and inspect and/or replace the power boosters. Check your air cleaner housing for damage or cracks and see if it still seals tight to the carburetor.

Inspect the ignition system and all of the wires. We will replace the ignition wires to the distributor when we re-wire the car, but we might consider replacing the distributor and plug wires. These do fail at the most inopportune times. The plug wires themselves are a lower cost item that can cost you big time if they fail.

**Radiator:** With the cooling system, clean the fin gaps on the radiator well. Inspect the radiator for any damage that might restrict airflow. Replace the upper and lower hoses and clamps. Check the fan, and if it is electric, see if it still runs strong without vibration.

**Steering:** The steering system is next on the list. Inspect the steering box or rack-and-pinion for excess play. Both can be adjusted for endplay, but excess wear means we need to get them rebuilt or replaced.

It is a good idea to replace all of the

tie-rod ends and maybe the tie rods if they have been bent and straightened during the past season. For the draglink systems, check the idler arm bushings for play as well as the draglink bushings. Replace as necessary.

Look over the steering link back to the steering wheel. Check for play in the U-joints, wheel mount, and steering shaft bushing in front of the steering wheel.

**Suspension:** As to the suspension parts at the front end, replacement or servicing of the ball joints is necessary. If you are using the low friction ball joints, check to see if there is wear in the housing and re-lubricate the ball with high-temperature lubricant.

The upper and lower control arm bushings need to be inspected and/or replaced at this time. The tighter we can make our suspension and steering system without binding, the better feel the driver will have for the car.



The brake rotors take a lot of abuse. The racing units are very durable, but if they've been on the car for a few seasons, you might check how much they have worn and if they have developed deep cracks. Small surface cracks are OK and normal. Inspect your hubs and re-grease the bearings noting the amount of wear. Replace the bearings and races if necessary.



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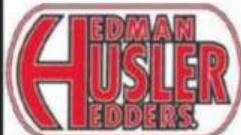
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**Shocks:** Take your shocks to your shock dealer for rebuilding. If they are stock-type shocks, check for leakage and cycle them to feel for resistance. All shocks should be dyno tested for function and rate.

If you think you need to change the values for your shocks, now is a good time to have that done. You should be running in the middle of the adjustment range for adjustable shocks.

**Brakes:** The brake system is the last system we will talk about. Least off, we will replace all of the fluids in the system when we put the car back together. But we also need to rebuild all of the master cylinders and clean and hone the caliper bores. We will install new brake pads and inspect our rotors for excessive cracks and wear.

Now is a good time to also check for brake pad to rotor alignment. This can get out of whack during the season from many causes, including overheating, crashes, broken rotors where they were replaced, but the alignment was not checked, or just improper alignment when mounted in the first place.

Check to see where your balance bar is located right out of the car. In all of the confusion during the season, the driver might have had to move the balance way to one side or the other. Now might be a great time to rethink your master cylinder sizes to compensate for a balance bar that is off center.

If your bar is biased to the front, you might consider installing a smaller front master cylinder or a larger rear master. This increases the force on the front brakes, or reduces the force on the rear brakes. The smaller diameter bore on a master cylinder produces more line pressure for the same amount of pedal pressure.

**Safety Items:** Once all of the mechanical components have been evaluated and decisions made as to rebuilding or replacement, we need to think about our safety systems. This is not just to inspect the existing parts, but to see if we need to improve some parts of the system.

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**14**



Your shocks should be rebuilt once a year, and now is the perfect time. It is also a good time to rethink your shock values. If your shocks are adjustable, are they run in the middle of the adjustment range? If not, while your shock expert is doing the rebuild, it is very easy to re-valve or install a different piston with a different bleed to provide you with more adjustment capability.

**15**



All of the rod ends should be inspected and when they have become loose, they need to be replaced. Always use high-strength steel rod ends for suspension links. These areas are not the place to save on weight. Never use aluminum rod ends for high stress parts. The third link is one area where this is especially true. The tension (pull direction) on the ends can be upwards of 3,000 pounds, and I've seen rod ends stretched out on a high-horsepower late model.

Belts get worn and stretch and have a manufacturer's life. These must be replaced periodically according to your track or series rules. Do you have adequate head restraints for lateral movement? Does your seat contain you well in side impacts? Do you have a five- or six-point seatbelt system? Do you have leg containment? Is there steel plating attached to the door bars to protect the driver from incursion? Do you use a head and neck restraint system? If you answered no to any of these questions, you need to rethink how safe your driver really is.

**Conclusion:** Think about how cool it would be to have rebuilt your race car into what appears to be a new car. When you arrive at the track for that first practice session, all of the other crews will be impressed.

A famous, multiple-winning driver once told me that when he arrived at the track with a clean trailer and an immaculately prepared car, he had already beat half of his competition. We're not guaranteeing that, but it will make your whole crew feel more professional and your sponsors will be glad they support your team. ■

 TECH

# ENGINE

There's a lot more involved in making a high-quality, race-ready set of titanium valves than just machining some on a lathe out of bar stock. Each valve is actually two pieces that are bonded together in a process that's often referred to as friction welding. This is actually quite efficient because of titanium's naturally high coefficient of friction, and it helps limit possible impurities that can weaken the valve. This batch is ready to be machined closer to the final size.



1

Racks of titanium stock that has been inspected and sits ready for production. Xceldyne's Keith Bryant says that the company specs out a very specific alloy for constructing its titanium valves, and must buy out a complete mill run from the foundry to get it. During our tour, we were constantly surprised by the many steps Xceldyne takes to ensure superior quality like this. In addition, each bar of titanium is given a reference number that will follow it through until the final valve is packaged. This way they can trace a problem back not only to the batch of material but even to the person running a specific machine on that particular day.



2

Bryant says the ideal heat treat can vary by application, so Xceldyne uses this electronically controlled oven to perform all the heat treatment operations in-house.

# No Shortcuts

XCELDYNE TECHNOLOGIES PULLS BACK THE CURTAIN TO REVEAL JUST HOW MUCH GOES INTO MANUFACTURING WORLD-CLASS TITANIUM VALVES FOR RACING

TEXT AND PHOTOGRAPHY BY JEFF HUNEYCUTT

*The conversation started* during our LS7 engine build project that we hope to eventually put into a Late Model and take to the track. We realized at the last minute that the combination of an LS7 cylinder head and the double-throwdown valvetrain we wanted was going to require a set of custom valves. There simply were no shelf-stock valves with a stem long enough to fit the head and handle the extra-tall valvespring installed height we needed.

And, of course, we didn't make this realization until deadlines



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3

Remember when we told you that titanium's high coefficient of friction made friction welding an ideal way to bond the head of the valve to the stem? Well, that high coefficient definitely isn't a good thing in a running engine where it will make the titanium valve much more likely to gall in the guide.

To cure this Xceldyne gives the stems of practically all its titanium valves a protective "moly" coating. We can't show you the machine or the proprietary process they've developed to do this, but we can show you a pair of valves right after the coating has been applied. These are actually just samples—you can tell because the keeper groove isn't normally cut until after the moly coating is in place. After this the stem will be cut down until the moly coating is just 0.003 of an inch. This coating is ideal because not only is it much slicker than titanium, it is also slightly porous so oil will actually cling to it for additional lubricity.



Every valve is checked in the quality control lab before it is shipped to the engine builder or racer. This machine is capable of visually checking several dimensions. On the laptop screen, each green block you see is a critical dimension that has fallen within spec. Xceldyne holds each valve to less than 0.001 of an inch of seat runout relative to the center of the stem and total seat roundness to 0.0005 of an inch. (That's five ten-thousandths of an inch!)



4

Here, the valves are turned down one at a time on a CNC lathe.



5

A final polish is put on each valve by hand before they go to be verified in the quality control department. Notice the stacks of foam for holding the valves. They aren't just used for shipping or display. Once the final machining processes are complete, the staff at Xceldyne treats each valve like jewelry and keeps them protected in the foam cases whenever they aren't being handled.



Here's a cutaway showing a hollow-stem valve. For longevity of the valve, it is critical that the hole is drilled in the exact center of the valve. That may sound obvious, but it's much easier said than done.



9

For those of you looking to push the absolute limits of valvetrain performance, Xceldyne has developed a hollow head to go with the hollow-stemmed valves. This is done by bonding a two-piece puck and then machining it into shape. Here, you can see just how much material can be removed without harming the valve's overall strength.

were already upon us. That's when we made a frantic call to Xceldyne Technologies to find out what could be done. If you aren't familiar, Xceldyne manufactures high-quality titanium valves—among other valvetrain products—for high-performance applications. They supply many of the NASCAR Cup engine builders as well as the engine builders that win regularly in Saturday night circle track classes. It turns out that a large percentage of Xceldyne's business is custom valves, and building us exactly what we needed wasn't a big deal to them at all.

Within a few days we had our custom valves, the engine build continued, and our bacon (so to speak) was saved. But during the process our interest was also piqued when Xceldyne was able to turn around a set of high-end custom valves to our specifications quite quickly. So we paid a visit to their facility in Thomasville, North Carolina, and engineer Keith Bryant gave us a look behind the scenes.

Just as you probably expected, there's a lot more going on than simply machining a valve out of a piece of bar stock on a lathe. We can't speak too much about what is standard in the industry because Xceldyne has developed many of its processes itself in order to meet the rigorous demands of race teams that have million-dollar budgets. But given everything that goes into creating a race-ready set of titanium valves, the cost suddenly seems a lot more reasonable. Read on and see what we mean. □

## SOURCES

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# ULTIMATE RACING

Brett Hudson capped off a great night at Kentucky Motor Speedway with a celebratory burnout. It was one of those days where almost everything went right.



## No Need to be Lucky in Kentucky

BRETT HUDSON  
WAS TOO GOOD  
TO LET FATE  
DECIDE THE  
BLUEGRASS 125

BY MATT PANURE  
PHOTOGRAPHY BY RICH  
CORBETT AND SHAWN CROSE

**When you're as** good as Brett Hudson was at Kentucky Motor Speedway for the third stop of the inaugural *Circle Track Great American Racing Series*, you don't need luck. Hudson had one of those days where a racer can claim the car was fast right from when it was unloaded. While he was the strongest of the strong, the day didn't come without its challenges.

The first challenge of the day came well before teams rolled through the pit gate. The oppressive Kentucky heat and humidity chased most racers and teams into their haulers to seek air conditioning or to whatever shade they could find. There was little relief from the heat, but for the first time in three events, precipitation didn't pose a threat.

Next, it was the track itself. With the sun beating down on the pavement all day long, track conditions were sure to change. For most of the day the track was slick from the heat. During preliminaries the track would cool, but only a bit. Hudson later admitted that he and his team could have made some changes for the feature to account for the change in track condition, but didn't want to mess with a good thing. All in all, they made the right decision.

For Hudson and others with some experience at the facility in Whitesville, Kentucky, there was a leg up. Several locals threw themselves into the 23-car field, and had an advantage as well. For the outsiders, KMS is a challenging circuit. The straightaways are relatively flat with progressive banking in the tight turns of the 3/8-mile. Narrow straightaways (about 40 feet) make for tight quarters and plenty of door rubbing. The inside line is heavily preferred, but it

was clear in practice that some of the newer drivers weren't sure just how to get there properly. Some were backing off too early, some were charging in too hard and washing up to the second groove.

In time though, new drivers were getting accustomed to KMS. However, drivers like Hudson and Chuck Barnes Jr. were making final tweaks throughout the practice sessions to get their cars prepped for the 125. Both drivers topped a practice session before qualifying began. G.A.R.S. regular Brian Bayer was first to qualify and put down a solid lap. Just a few cars later, Hudson came out and set a blistering time of 17.099 seconds, which held as a new track record. Although Barnes had been hanging with Hudson at the top of the charts through practice, he could only muster the seventh fastest lap. This would come into play later when the invert for the feature was drawn.

## The Prelims

If qualifying wasn't enough of a statement for Hudson, the qualifying heat race made a strong case for what was to come. Hudson immediately put the field in his rearview mirror. While he built his lead, Barnes was sent scrambling to dodge Todd Kempf and Larry Roberts in a temporary three-wide situation. Although he fell back, Barnes was able to climb his way back to third.

The second qualifying heat provided plenty of action in a battle for the lead. Initially, Brian Bayer pulled away from the field. However, Ricky Sanford chased him down and put pressure on until a caution set up the final duel. Sanford capitalized on a Bayer slip to grab the lead on the restart and went on to the win—creating a sweep of the #00 cars in the heats.

After the qualifying heats the invert was set at six, putting Chuck Barnes Jr. on the pole for the Bluegrass 125 with Marcus Elliott to his outside.



The hot weather didn't keep the fans from coming out. Fans at Whitesville were engaged from qualifying through the checkered flag in the Bluegrass 125.



Any shade was good shade. Loren Short's team used a pop tent to protect themselves from the scorching Kentucky sun while working on the number 3.



Then again, sometimes you just have to get down and dirty. Scotty Earl makes some changes on his number 44. Chuck Barnes Jr. became the third different driver to start a feature in this machine in three G.A.R.S. races.



Nothing like some fresh Hoosier race tires.



The backstretch at Kentucky Motor Speedway can get tight. Plenty of tire marks give the wall some character.

# ULTIMATE RACING



CT Editor-in-Chief Rob Fisher likes to have some fun at the drivers' meeting. There are always a few laughs before everyone gets down to business.



Shawn Smith (86) works some different lines in practice at KMS.



Loren Short adapted to KMS pretty quickly. He was in the Top 10 for most of the race, but suffered a DNF.



O' Canada! Nearly 12 hours and a trip across the border gave G.A.R.S. its first international driver in Donnie Beatty. The multiple-time Peterborough Speedway Champion finished 12th.

## The Bluegrass 125

Barnes wasted little time securing the top spot. By the time he entered Turn 3 on the first lap, Barnes had the lead, and began to build it. Behind him the outside line saw several drivers fall back, allowing Hudson to grab the low line and work his way to a quick battle for Fourth.

Through the first 10 laps Hudson picked his way through the Top 5. He secured the second spot by lap 11 and set his sights on Barnes, whose advantage was half a straightaway. Hudson turned up the wick and began to melt away the lead. At lap 14 he was just four car lengths behind. One lap later lapped traffic helped put Hudson on the bumper of Barnes.

Barnes escaped with the lead, but he and Hudson found lapped traffic again on lap 20. The battle was paused on lap 23 when a caution fell for a spin involving Matt Greer. The following restart gave Barnes the inside line with Hudson trying to outgun him up top. Barnes prevailed on the bottom line and held a healthy advantage over the next 15 laps, until Hudson caught back up.

A nervous moment for both competitors came on lap 44 when the leaders were attempting to lap Mike Todd. As Barnes went high, Hudson ducked low, momentarily creating a three-wide situation. Both Todd and Hudson backed out and Barnes' lead grew to almost a straightaway. That lead evaporated just three laps later when caution fell for a disabled machine.

The following restart again saw Hudson tuck back in line behind Barnes. However, on lap 59 Barnes slid up the track going into Turns 1 and 2. Hudson took advantage and secured the top spot.

"He just went into one and I don't know if he overdrove or hit oil or something," Hudson said. "It just washed up on him and made it real easy for me. I didn't expect that, but I'll take it."

Barnes said the pressure from Hudson may have been a little too much. He needed to make a brake bias adjustment after the restart, and didn't make it in time. "He applied a little pressure to me and I buckled under that, getting into Turn 1," Barnes

said. "I had to dial some front brake in after the cautions. I didn't dial it in fast enough, got a little loose in the corner, and he went by."

Although in the top spot, Hudson could not get comfortable. Cautions continued to fly over the second half of the race, bringing Barnes back to the right side of Hudson's machine. The first restart after a caution on lap 70 saw the green flag waved off, due to an uneven start. Hudson admits there was some gamesmanship between the two.

"It's so hard to pass. We were two really equal cars," Hudson said. "You've got to gain every advantage. He was trying to jump me, and I was trying to keep it from him. I would have done the same thing if I was on the outside."

Behind the leaders, the battles from Third on back were maddening. Regular G.A.R.S. runners Shawn Smith, Curtis Peebles, Brian Bayer, and Todd Kempf remained in the mix for a podium finish, slicing and dicing with Elliott and Blake Hillard.

The first incident came on lap 77 when Peebles slid out of Turn 4. Elliott tried to avoid the left rear quarter-panel of Peebles' machine, but had built too much momentum in hopes for a pass. Both tangled and spun to the infield, setting them at the tail end of the lead-lapped cars.

With caution laps clicking off, the field returned to green at lap 90. While in side-by-side formation in the battle with Hudson for the lead, Barnes bobbed in Turn 4. Behind him Bayer slammed on the brakes to avoid piling in. Bayer joined Peebles and Elliott at the tail end of the lead lap cars in Seventh.

The most heated battle came for Fourth just past the 100-lap mark. Peebles had charged back up to Fifth and was searching for a way around Hillard to challenge the top three. Hillard kept the inside line sealed off as best he could, trying to force Peebles to go to the high side. Peebles found some space on the inside on lap 103 and the two came together, resulting in a chain reaction of slowing machines and a Loren Short spin. Just two laps after the restart Peebles and Hillard engaged in battle again. On lap 106 they came together and collected



Todd Kempf (9) and Roger Williams (32) battle during one of two qualifying races.



The leaders nearly experienced trouble when going through lapped traffic. Hudson had to wait for a better opportunity than the one he had on lap 44.

Todd Kempf. The yellow came out, but all cars carried on without spinning.

Throughout these yellows, the best opportunity for Barnes came on the lap 96 restart, when he nosed ahead of Hudson for a lap on the outside. However, by the time lap 97 was registered, Hudson was alone out front again.

The final caution of the race came on lap 122. Hudson and Barnes were destined for a final showdown, but it was much of the same. Hudson quickly dashed away from Barnes, this time to the checkered flag. Behind Barnes, Smith separated himself from the pack to finish Third, Elliott finished Fourth, and Todd Kempf rounded out the Top 5.

### A Sweet Sweep

Hudson became the third different driver to pick up the Miller Welders Fast Qualifier Award, good for a \$500 certificate from the G.A.R.S. supporting sponsor. With his win in the qualifying race and feature Hudson became the first driver to sweep a G.A.R.S. event. Todd Kempf came close at Illiana with a Second Place finish after setting fast time and winning his heat, but problems with the rear end of his machine did not allow him to challenge Curtis Peebles for the win. At the first race in Salem Chuck Barnes Sr. won his qualifying heat after setting fast time but fell back to Eighth in the feature event.

### Some Local Flavor

Of the 11 drivers who had registered points in the 2015 season at KMS, five tested themselves against the G.A.R.S. travelers. Point leader Timmy Burch, who had two wins at KMS coming into the event, fared the best with a Ninth



Brett Hudson got to the bottom line and quickly went to work. Here Barnes is putting pressure on Illiana winner Curtis Peebles.



Hudson slipped past Barnes on lap 59.



The exit of Turn 2 became calamity corner during the Bluegrass 125. Donnie Beatty (R-40) slips past the spinning machines of Mike Todd (29) and Ronnie Cotton (23).



Barnes had a few chances on the restarts, but Hudson was too strong on the inside line. On the final restart Hudson had Barnes cleared by the time they exited Turn 2.

Hudson, family, and friends celebrate the first clean sweep in G.A.R.S history.



# ULTIMATE RACING

Evan Burch made up the most spots in the race. His advancement of six spots scored him \$500 from Miller Welders.



Even after a spin, Marcus Elliott finished Fourth. He and Curtis Peebles had a spirited battle for position in the second half of the race.



Brandon Tregembo and his team didn't have the best day, but the Nova built by high school students in Roseville, Michigan, are using every G.A.R.S. race as a learning experience.

Two Third Place finishes and a Fourth Place finish have Shawn Smith at the top of the inaugural G.A.R.S. season point standings. His lead is only one point over Todd Kempf and two over Curtis Peebles.



Place finish. Just behind him was his brother, Evan. Evan's run from 16th to 10th was the biggest advancement of the race. Because of his charge to a Top 10 spot, Evan was awarded the Miller Welders Hard Charger Award.

The remaining KMS regulars in the field had their struggles. Logan Boarman finished 13th, Larry Roberts 19th, and Chris Harmon (driving Larry Latham's number 58) finished 21st.

## Elliott's Improvement

The trip to Whitesville was Marcus Elliott's second appearance of the three G.A.R.S. races so far in 2015. From his race in Salem to the event at KMS, Elliott saw the best improvement that any driver has seen so far this season. Elliott posted a 14th Place finish at Salem, and bettered that result by 10 spots in round three.

The run to Fourth wasn't easy for Elliott, even after starting from the front row. The likes of Smith, Kempf, Peebles, and Hillard made for a spirited battle and the eventual tangle on lap 77. However, Elliott was able to recover and battle his way back to Fourth. For escaping what could have been a bad result in the second half of the race, Elliott was awarded the NecksGen "Save Your Neck" Award, and received a free head and neck restraint system.

## The Unlucky Side

Sometimes you're able to escape bad luck, sometimes you aren't. While Elliott was able to get away, there was no escape for Brandon Tregembo. As you've read in *Circle Track*, Tregembo Drives for Drive ONE Detroit, which is a team based out of Roseville High School in Michigan. The team had its struggles getting the car to start, but, even in the extreme heat, kept wrenching on the Chevy Nova in hopes of starting the Bluegrass 125. Although he required a push start and only made one lap, the 18-year-old was able to take the green flag. E3 Spark Plugs will have Tregembo and his team covered with a product certificate and the Hard Luck Award.

## Smith Takes the Point Lead

Consistency has been the key for Louisville, Kentucky's Shawn Smith.

With his Third Place finish at KMS, Smith took the G.A.R.S. points lead at the season's halfway point.

"We'd like to get a win, but I've got a lot of laps here. I'm sure that helped," Smith said to the lone G.A.R.S. race in his home state. "It was a hot night, you just had to keep chugging along. All of those cautions and restarts, it's hard to get going."

Smith might have felt like he was on an island in the Bluegrass 125. Ahead of him Hudson and Barnes had a pretty healthy advantage as they tried to settle the lead. Behind him was the frantic battle for Fourth described earlier. The restarts put Smith back into the mix of both.

"These turns are so sharp it's hard to get going on the inside," he said. With those guys on the outside you can't lay into the throttle like you want to and they pinch you down. It's pretty hairy for the first couple of laps. You've got to really get up on the wheel and get some distance on those guys."

Another Third Place finish at Salem and a Fourth Place finish at Illiana have given Smith a one-point lead over Todd Kempf. Illiana winner Curtis Peebles is Third, just 2 points behind Smith. Brian Bayer is Fourth, just 10 points behind Smith, and Roger Williams rounds out the Top 5, 17 points out of the top spot.

#### Lap Leaders

Chuck Barnes Jr. (1-58, 97),  
Brett Hudson (59-96, 98-125)

#### Miller Welders Fast Qualifier

Hudson, 17.099 seconds  
(New Track Record)

#### Heat One Winner

Hudson

#### Heat Two Winner

Ricky Sanford

#### Miller Welders Hard Charger

Evan Burch (16th to 10th)

#### E3 Hard Luck Award

Brandon Tregembo

#### NecksGen "Save Your Neck Award"

Marcus Elliott

### Circle Track Great American Racing Series Top 10 in Points

POS.	CAR #	DRIVER	HOMETOWN	POINTS
1	86	Shawn Smith	Louisville, KY	140
2	9	Todd Kempf	Bretzville, IN	139
3	42	Curtis Peebles	Round O, SC	138
4	99	Brian Bayer	Birdseye, IN	130
5	32W	Roger Williams	St. Paul, IN	123
6	3	Loren Short	Clio, MI	119
7	29	Mike Todd	Des Moines, IA	102
8	6	Blake Hillard	Owensboro, KY	90
9	00H	Brett Hudson	Owensboro, KY	88
10	20	Marcus Elliott	Sellersburg, IN	82

### It all comes down to Memphis ...

With the unfortunate rain out at Plymouth for the Down and Dirty 125, and construction at Memphis' dirt track facility, the G.A.R.S. Championship comes down to the E3 Spark Plugs 100 at Memphis International Speedway.

Memphis has hosted NASCAR Nationwide Truck Series, and ARCA races. The 3/4-mile will be the largest track G.A.R.S. has competed on this season, providing a true test to be crowned Champion. 

### Circle Track Great American Racing Series Bluegrass 125 Official Results

POS.	CAR #	DRIVER	HOMETOWN	LAPS	POINTS	WINNINGS
1	00H	Brett Hudson	Owensboro, KY	125	50	\$5,000
2	44	Chuck Barnes Jr.	Louisville, KY	125	48	\$2,500
3	86	Shawn Smith	Louisville, KY	125	47	\$2,000
4	20	Marcus Elliott	Sellersburg, IN	125	46	\$1,500
5	9	Todd Kempf	Bretzville, IN	125	45	\$1,000
6	42	Curtis Peebles	Round O, SC	125	44	\$900
7	99	Brian Bayer	Birdseye, IN	125	43	\$800
8	6	Blake Hillard	Owensboro, KY	125	42	\$750
9	27	Timmy Burch	Whitesville, KY	125	41	\$700
10	08	Evan Burch	Whitesville, KY	125	40	\$675
11	02	Derrick Bartlett	Philipot, KY	125	39	\$650
12	R-40	Donnie Beatty	Beaverton, ON, Canada	122	38	\$625
13	2	Logan Boarman	Whitesville, KY	120	37	\$600
14	23	Ronnie Cotton	Owensboro, KY	119	36	\$575
15	29	Mike Todd	Des Moines, IA	115	35	\$550
16	3	Loren Short	Clio, MI	103	34	\$525
17	32	Roger Williams	St. Paul, IN	90	33	\$500
18	00S	Ricky Sanford	Greenbriar, TN	83	32	\$500
19	8	Larry Roberts	Whitesville, KY	77	31	\$500
20	49	Jeremy Adkisson	Calhoun, KY	44	30	\$475
21	58	Chris Harmon	Brooks, KY	29	29	\$450
22	77	Matt Greer	Whitesville, KY	28	28	\$450
23	1	Brandon Tregembo	Ray Township, MI	1	27	\$425

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**16-17** Thompson Speedway  
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[www.arcaracing.com](http://www.arcaracing.com)

**Oct. 16** Kansas Speedway;  
Kansas City, KS

## American Sprint Car Series

[www.ascsracing.com](http://www.ascsracing.com)

**Oct.**  
**16-17** Devils Bowl; Mesquite, TX

**Oct.**  
**21-24** I-30 Speedway;  
Little Rock, AR

**Nov.**  
**13-14** Cocopah Speedway;  
Yuma, AZ

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[www.racequip.com](http://www.racequip.com)

## Big 8 Series

[www.big8series.com](http://www.big8series.com)

**Oct. 10** La Crosse Fairgrounds  
Speedway; La Crosse, WI

## Buckeye Outlaw Sprint Series

[www.buckeyesprints.com](http://www.buckeyesprints.com)

**Oct. 10** Eldora Speedway;  
Rossburg, OH

## CARS Tour

[www.carsracingtour.com](http://www.carsracingtour.com)

**Nov. 1** Hickory Motor Speedway;  
Hickory, NC

## Carolina Clash

[www.carolinaclash.com](http://www.carolinaclash.com)

**Oct. 17** Carolina Speedway;  
Gaston, NC

**Oct.**  
**23-24** Cherokee Speedway;  
Gaffney, SC

## Champion Racing Association

[www.cra-racing.com](http://www.cra-racing.com)

**Oct.**  
**10-11** Winchester Speedway;  
Winchester, IN

## Fastrak Racing Series

[www.fastrakracing.com](http://www.fastrakracing.com)

**Nov.**  
**13-14** Lavonia Speedway;  
Lavonia, GA

## Formula 1

[www.formula1.com](http://www.formula1.com)

**Oct. 9-11** Russian Grand Prix;  
Sochi, Russia

**Oct.**  
**23-25** United States Grand Prix;  
Austin, TX

**Oct. 30-**  
**Nov. 1** Mexican Grand Prix;  
Mexico City, Mexico

**Nov.**  
**13-15** Brazilian Grand Prix;  
São Paulo, Brazil

**Nov.**  
**27-29** Grand Prix of Abu Dhabi;  
Yas Marina, UAE

## International Super Modified Association (ISMA)

[www.ismasupers.com](http://www.ismasupers.com)

**Oct. 16** Thompson Int'l Speedway;  
Thompson, CT

## Lucas Oil Dirt Late Model Series

[www.lucasdirt.com](http://www.lucasdirt.com)

**Oct.**  
**16-17** Portsmouth Raceway Park;  
Portsmouth, OH

## Lucas Oil Midwest Late Model Racing Association

[www.mlraracing.com](http://www.mlraracing.com)

**Oct. 8-10** Lucas Oil Speedway;  
Wheatland, MO

## Modifieds of Mayhem

[www.montgomerymotorspeedway.org](http://www.montgomerymotorspeedway.org)

**Oct. 17** South Alabama Speedway;  
Kinston, AL

# DATES

## NASCAR Sprint Cup Series

[www.nascar.com](http://www.nascar.com)

- Oct. 18** Kansas Speedway; Kansas City, KS
- Oct. 25** Talladega Superspeedway; Talladega, AL
- Nov. 1** Martinsville Speedway; Martinsville, VA
- Nov. 8** Texas Motor Speedway; Fort Worth, TX
- Nov. 15** Phoenix International Raceway; Avondale, AZ
- Nov. 22** Homestead-Miami Speedway; Homestead, FL

## NASCAR Xfinity Series

[www.nascar.com](http://www.nascar.com)

- Oct. 17** Kansas Speedway; Kansas City, KS
- Nov. 7** Texas Motor Speedway; Fort Worth, TX
- Nov. 14** Phoenix International Raceway; Avondale, AZ
- Nov. 21** Homestead-Miami Speedway; Homestead, FL

## NASCAR Camping World Truck Series

[www.nascar.com](http://www.nascar.com)

- Oct. 24** Talladega Superspeedway; Talladega, AL
- Oct. 31** Martinsville Speedway; Martinsville, VA
- Nov. 6** Texas Motor Speedway; Fort Worth, TX
- Nov. 13** Phoenix International Raceway; Avondale, AZ
- Nov. 20** Homestead-Miami Speedway; Homestead, FL

## NASCAR K&N Series West

[hometracks.nascar.com](http://hometracks.nascar.com)

- Oct. 17** All American Speedway; Roseville, CA

- Nov. 12** Phoenix International Raceway; Avondale, AZ

## NASCAR Whelen Modified Series

[hometracks.nascar.com](http://hometracks.nascar.com)

- Oct. 18** Thompson Speedway Motorsports Park; Thompson, CT

## NASCAR Whelen Modified Series

[hometracks.nascar.com](http://hometracks.nascar.com)

- Oct. 8** Charlotte Motor Speedway; Charlotte, NC

## Nesmith

[www.nesmithracing.com](http://www.nesmithracing.com)

- Oct.**  
**16-17** Golden Isles Speedway; Brunswick, GA

- Nov.**  
**19-21** Bubba Raceway Park; Ocala, FL

## POWRi Racing

[www.powri.com](http://www.powri.com)

- Oct. 10** Jacksonville Speedway; Jacksonville, IL

- Oct. 23** Wayne County Speedway; Orrville, OH

## Pro All Stars Series (PASS) Southern Super Late Models

[www.proallstarsseries.com](http://www.proallstarsseries.com)

- Nov. 7** Caraway Speedway; Sophia, NC

- Nov. 21** Hickory Motor Speedway; Hickory, NC

## Pro All Stars Series (PASS) Southern Pro Late Models

[www.proallstarsseries.com](http://www.proallstarsseries.com)

- Nov. 21** Hickory Motor Speedway; Hickory, NC

## Southern United Professional Racing Series

[www.suprracing.com](http://www.suprracing.com)

- Nov. 28** Lone Star Speedway; Kilgore, TX

## USAC Silver Crown

[www.usacracing.com](http://www.usacracing.com)

- Oct. 10** New York State Fairgrounds; Syracuse, NY

## USAC Sprint Car

[www.usacracing.com](http://www.usacracing.com)

- Nov.**  
**12-14** Perris Auto Speedway; Perris, CA

- Nov.**  
**19-21** USA Raceway; Tucson, AZ

## Winged Outlaw Figure 8 Series (WOFS)

[www.wofsracing.com](http://www.wofsracing.com)

- Oct. 10** Anderson Speedway; Anderson, IN

## World of Outlaws Sprint Cars

[www.woosprint.com](http://www.woosprint.com)

- Oct. 10** Rolling Wheels Raceway; Elbridge, NY

- Oct. 24** Port Royal Speedway; Port Royal, PA

- Oct. 25** Utica-Rome Speedway; Vernon, NY

- Nov. 5-7** The Dirt Track at Charlotte; Concord, NC

## World of Outlaws Late Models

[www.woolms.com](http://www.woolms.com)

- Nov. 5-7** The Dirt Track at Charlotte; Concord, NC



# SHOW ME THE MONEY

BY ERNIE SAXTON

## SOME SPONSORSHIP QUESTIONS MAY SEEM OBVIOUS BUT THEY'RE ASKED REPEATEDLY

# Often Asked

**This issue** I am choosing to answer a couple of questions. These are the ones that I am asked the most often.

One of the questions I am asked most often is how do I find sponsors? How do I locate prospects that

could have interest in sponsoring my race car or my event? Research is an important part of finding sponsor success.

Those who live in or near most major cities are fortunate because most of those cities have business journals. Each week I read the *Philadelphia Business Journal* and the *Lehigh Valley Business Journal*. One reason is that they keep me informed on the latest business news and offer some great articles on marketing.

However, the key reason is that on a regular basis the business journals offer LEADS. That is a list of new businesses that are opening or have opened in the area. Why is this important? This is great information to help you in your quest for sponsorship support.

So what do you do once you get the list? My suggestion is to send a letter and congratulate them on their new business. Tell them you would like to assist them with their marketing efforts and you will be in touch. Use nice stationary and make sure the letter is well written and includes no mistakes. Do not send your letter written on stationary that includes fire breathing race cars. You want to present a professional image. And when you call, your goal is set, give them a brief understanding of what you are offering and set up a personal meeting. From the meeting you will gain information that will allow you to create an actual proposal addressing how you can help them grow, gain exposure, and drive traffic to their business.

Think about this! The business journals offer an annual Book of Lists, which is packed with information that will help a sponsorship seeker. The *Philadelphia Business Journal's* Book of Lists offers lists of breweries, casinos, top restaurants, banks, major employers in the region, chambers of commerce, family owned businesses, public companies, private companies, and so much more. From this Book of Lists you can put together what I call a hit list. Included are addresses, phone numbers, contact names, and much, much more—a gold mine of information for the sponsorship seeker.

Of course, you are going to have to invest in a subscription, but that investment will more than pay for itself.

To find out if there is a business journal covering your area check in at [www.acbj.com](http://www.acbj.com).

We should also tell you that *American City Business Journals* publishes the *SportsBusiness Journal*, a publication that I read cover to cover each week. This will give you news on what is going on in the sports business, not just motorsports, and it could very well result in you getting some ideas on how to handle your marketing efforts. It just might be where you find that elusive sponsor. Again, you will have to spend a few bucks to subscribe.

**WHY DON'T I GET RETURN CALLS?** Oftentimes I hear from racers telling me they leave voicemails and never get a response. Oftentimes I am left messages that are hard to understand, and the person leaving the message speaks so quickly that we have to play the message over and over a few times to understand it all and get the phone number. You would be surprised how often there is no phone number left for us so that we can return the call.

According to James Dorsey's column "Maverick Minute," appearing in *Success Magazine*, here is a must-do. When you leave a voicemail, speak slowly and specify how you want the person to respond—phone call or text. We also suggest including a time when you are best available for a return call.

Email continues to be a mystery for many. If you find that you will be unavailable by email, set up an autoresponder that says so. We do not need to know where you are or what you are doing. Should they be contacting someone else, or should they wait for you to return on a specific date?

Please write your email messages in a business-like manner and leave the abbreviations and cutesy stuff out. You want the message responded to.

Mr. Dorsey also offered a couple of other suggestions. One that stands out is that important conversations, and seeking sponsorship is important, are best carried out in person or at least by telephone. He points out that he would rather have a tough conversation where both sides feel heard, included, and valued.

Please don't carry on conversations that relate to your sponsorship deal on Facebook where just about everyone can see what your conversation is all about and perhaps some secrets given away.

**THINK ABOUT THIS.** According to an article appearing in a recent edition of *Advertising Age*, Researcher Communicus finds that too few Big Game ads sell. When we talk about the Big Game we are talking about the Super Bowl.

The cost of a 30-second spot for companies not having an ad contract with the network showing the game is \$4 million and that does not include the huge amount of money that will be spent on actually creating the commercial spot.

The research firm has found about 60 percent of ads it tests don't increase purchases or purchase intent.

For those of you looking for that big dollar support for your race team or event, you just may want to keep that little nugget of information available for use in your proposal.

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